☐ Final Report
☑ Revised Report

Report Date:
12-Sep-17 18:07

Laboratory Report
SC37956

Gulf Oil L.P.
281 Eastern Avenue
Chelsea, MA 02150
Attn: Andrew P. Adams

Project: Gulf Terminal - Chelsea, MA
Project #: Gulf Chelsea

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87936
Maine # MA138
New Hampshire # 2972/2538
New Jersey # MA011
New York # 11393
Pennsylvania # 68-04426/68-02924
Rhode Island # LAO00348
USDA # P330-15-00375
Vermont # VT-11393

Authorized by:

Dawn Wojcik
Laboratory Director

Eurofins Spectrum Analytical holds primary certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.
Please note that this report contains 25 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Spectrum Analytical, Inc. is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Eurofins Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

Sample Summary

Work Order: SC37956

Project: Gulf Terminal - Chelsea, MA

Project Number: Gulf Chelsea

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SC37956-01	Chelsea Creek	Surface Water	09-Aug-17 08:30	09-Aug-17 16:10
SC37957-01	Outfall 003	Surface Water	09-Aug-17 09:00	09-Aug-17 16:05

CASE NARRATIVE:

Data has been reported to the MDL. This report includes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the detection limit are reported as "<" (less than) the detection limit in this report.

The samples were received 3.6 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group. If method or program required MS/MSD/Dup were not performed, sufficient sample was not provided to the laboratory.

Analyses for Total Hardness, pH, and Total Residual Chlorine fall under the state of Pennsylvania code Chapter 252.6 accreditation by rule.

Please note that this report contains 30 pages of analytical data from New England Bioassay, a Division of GZA.

September 12, 2017 Report Revision Case Narrative:

This report has been revised to report only phenol by 8270.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

EPA 200.8

Duplicates:

B184151-DUP1 *Source: SC37956-01*

[Undefined]

Lead

Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.

Copper

Elevated reporting limit due to sample matrix interference. MA CAM reporting limit not met.

Lead

Samples:

SC37956-01 *Chelsea Creek*

[Undefined]

Lead

Elevated reporting limit due to sample matrix interference. MA CAM reporting limit not met.

Lead

SW846 8260C

Calibration:

1707018

Analyte quantified by quadratic equation type calibration.

Naphthalene

SW846 8260C

Calibration:

1707018

This affected the following samples:

1713787-BLK1
1713787-BS1
1713787-BSD1
Chelsea Creek
Outfall 003
S706141-ICV1
S707149-CCV1

Laboratory Control Samples:

1713787 BS/BSD

Tert-Butanol / butyl alcohol percent recoveries (63/71) are outside individual acceptance criteria (70-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Outfall 003

Samples:

S707149-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Methyl tert-butyl ether (-24.9%)
Tert-Butanol / butyl alcohol (-36.5%)

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

Ethanol (-25.9%)

This affected the following samples:

1713787-BLK1
1713787-BS1
1713787-BSD1
Outfall 003

SW846 8270D

Laboratory Control Samples:

1713829 BS/BSD

Phenol percent recoveries (24/23) are outside individual acceptance criteria (30-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Outfall 003

Samples:

S707242-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

2,4,5-Trichlorophenol (25.2%)

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

2,4-Dinitrophenol (31.6%)
4,6-Dinitro-2-methylphenol (28.3%)
4-Nitrophenol (57.4%)

SW846 8270D

Samples:

S707242-CCV1

This affected the following samples:

1713829-BLK1
1713829-BS1
1713829-BSD1

SW846 8270D SIM

Calibration:

1708010

Analyte quantified by quadratic equation type calibration.

Benzo (a) pyrene
Benzo (b) fluoranthene
Benzo (e) pyrene-d12
Benzo (g,h,i) perylene
Benzo (k) fluoranthene
Dibenzo (a,h) anthracene
Indeno (1,2,3-cd) pyrene

This affected the following samples:

1713829-BLK2
1713829-BS2
1713829-BSD2
Chelsea Creek
Outfall 003
S706943-ICV1
S707455-CCV1

Laboratory Control Samples:

1713829 BS/BSD

Acenaphthene percent recoveries (30/33) are outside individual acceptance criteria (40-140), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Chelsea Creek
Outfall 003

Acenaphthylene percent recoveries (29/34) are outside individual acceptance criteria (40-140), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Chelsea Creek
Outfall 003

Anthracene percent recoveries (36/42) are outside individual acceptance criteria (40-140), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Chelsea Creek
Outfall 003

Fluorene percent recoveries (37/41) are outside individual acceptance criteria (40-140), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Chelsea Creek
Outfall 003

SW846 8270D SIM

Laboratory Control Samples:

1713829 BS/BSD

Naphthalene percent recoveries (27/31) are outside individual acceptance criteria (40-140), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Chelsea Creek
Outfall 003

Phenanthrene percent recoveries (35/42) are outside individual acceptance criteria (40-140), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Chelsea Creek
Outfall 003

Samples:

S707455-CCV1

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

Indeno (1,2,3-cd) pyrene (20.8%)

This affected the following samples:

1713829-BLK2
1713829-BS2
1713829-BSD2
Chelsea Creek
Outfall 003

SC37957-01 *Outfall 003*

Client requested reporting limits can not be met due to interferences present in sample; requested reporting limits cannot be met because re-extraction is required and there is insufficient sample volume to complete this.

SW9222D-06

Samples:

SC37957-01 *Outfall 003*

Received past hold time for Fecal Coliforms

Fecal Coliforms

Sample Acceptance Check Form

Client:	Gulf Oil L.P.
Project:	Gulf Terminal - Chelsea, MA / Gulf Chelsea
Work Order:	SC37956
Sample(s) received on:	8/9/2017

The following outlines the condition of samples for the attached Chain of Custody upon receipt.

	Yes	No	N/A
Were custody seals present?	☐	☑	☐
Were custody seals intact?	☐	☐	☑
Were samples received at a temperature of ≤ 6°C?	☑	☐	☐
Were samples refrigerated upon transfer to laboratory representative?	☑	☐	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☑	☐	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Sample Acceptance Check Form

Client:	Gulf Oil L.P.
Project:	Gulf Terminal - Chelsea, MA / Gulf Chelsea
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Were samples refrigerated upon transfer to laboratory representative?	☑	☐	☐
Were sample containers received intact?	☑	☐	☐
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	☑	☐	☐
Were samples accompanied by a Chain of Custody document?	☑	☐	☐
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	☑	☐	☐
Did sample container labels agree with Chain of Custody document?	☑	☐	☐
Were samples received within method-specific holding times?	☑	☐	☐

Summary of Hits

Lab ID: SC37956-01 **Client ID:** Chelsea Creek

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Ammonia as Nitrogen	0.18		0.05	mg/L	E350.1
Copper	2.1		1.0	µg/L	EPA 200.8
Lead	2.2	RL-08,	2.5	µg/L	EPA 200.8
Nickel	0.55	J	5.0	µg/L	EPA 200.8
Zinc	6.4	J	20	µg/L	EPA 200.8
Salinity	27.8		1.00	ppt (1000)	SM 2520 (01)
Total Solids	38500		100	mg/l	SM2540 B (11)
Total Suspended Solids	24.8		1.0	mg/l	SM2540D (11)
Total Organic Carbon	2.70		1.00	mg/l	SM5310B (00, 11)

Lab ID: SC37957-01 **Client ID:** Outfall 003

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Ammonia as Nitrogen	0.50		0.05	mg/L	E350.1
Chromium	5.6	J	10	µg/L	EPA 200.8
Copper	5.6		1.0	µg/L	EPA 200.8
Lead	8.0		0.50	µg/L	EPA 200.8
Nickel	4.0	J	5.0	µg/L	EPA 200.8
Zinc	17	J	20	µg/L	EPA 200.8
Total Solids	250		5.00	mg/l	SM2540 B (11)
Total Suspended Solids	14.2		1.0	mg/l	SM2540D (11)
Total Residual Chlorine	0.025		0.020	mg/l	SM4500-Cl-G (11)
Total Organic Carbon	5.86		1.00	mg/l	SM5310B (00, 11)
Fecal Coliforms	45	Q1	10	/100 mls	SW9222D-06

Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Chelsea Creek SC37956-01	Gulf Chelsea	Surface Water	09-Aug-17 08:30	09-Aug-17

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Aromatics by SW846 8260 Prepared by method SW846 5030 Water MS													
71-43-2	Benzene	< 1.0		µg/l	1.0	0.3	1	SW846 8260C	10-Aug-17	10-Aug-17	GMA	1713787	
100-41-4	Ethylbenzene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	
91-20-3	Naphthalene	< 1.0		µg/l	1.0	0.4	1	"	"	"	"	"	
108-88-3	Toluene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	< 2.0		µg/l	2.0	0.4	1	"	"	"	"	"	
95-47-6	o-Xylene	< 1.0		µg/l	1.0	0.3	1	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*103*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*101*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*98*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*100*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
SVOCs by SIM Prepared by method SW846 3510C													
83-32-9	Acenaphthene	< 0.049		µg/l	0.049	0.007	1	SW846 8270D SIM	11-Aug-17	21-Aug-17	MSL	1713829	
208-96-8	Acenaphthylene	< 0.049		µg/l	0.049	0.013	1	"	"	"	"	"	
120-12-7	Anthracene	< 0.049		µg/l	0.049	0.007	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 0.049		µg/l	0.049	0.017	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 0.049		µg/l	0.049	0.020	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 0.049		µg/l	0.049	0.020	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perylene	< 0.049		µg/l	0.049	0.018	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 0.049		µg/l	0.049	0.018	1	"	"	"	"	"	
218-01-9	Chrysene	< 0.049		µg/l	0.049	0.005	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	< 0.049		µg/l	0.049	0.018	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 0.049		µg/l	0.049	0.004	1	"	"	"	"	"	
86-73-7	Fluorene	< 0.049		µg/l	0.049	0.012	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.049		µg/l	0.049	0.021	1	"	"	"	"	"	
91-20-3	Naphthalene	< 0.049		µg/l	0.049	0.021	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 0.049		µg/l	0.049	0.008	1	"	"	"	"	"	
129-00-0	Pyrene	< 0.049		µg/l	0.049	0.006	1	"	"	"	"	"	
Surrogate recoveries:													
205440-82-0	*Benzo (e) pyrene-d12*	*66*			*30-130 %*			"	"	"	"	"	
Total Metals by EPA 200/6000 Series Methods Prepared by method General Prep-Metal													
	Preservation	**Field Preserved; pH<2 confirmed**		N/A			1	EPA 200/6000 methods	09-Aug-17		AAW	1713756	
General Chemistry Parameters													
7782-50-5	Total Residual Chlorine	< 0.020	CIHT	mg/l	0.020	0.006	1	SM4500-Cl-G (11)	19-Aug-17 13:49	19-Aug-17 14:41	RLT	1714286	X
	pH	**8.12**	pH	pH Units			1	ASTM D 1293-99B	09-Aug-17 17:30	16-Aug-17 13:45	TN	1713764	X
	Salinity	**27.8**		ppt (1000)	1.00	0.144	1	SM 2520 (01)	16-Aug-17	16-Aug-17	BD	1714097	
	Total Solids	**38,500**	LIV	mg/l	100	30.6	1	SM2540 B (11)	10-Aug-17	15-Aug-17	CMB	1713791	
	Total Suspended Solids	**24.8**		mg/l	1.0	0.4	1	SM2540D (11)	10-Aug-17	11-Aug-17	CMB	1713788	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Chelsea Creek SC37956-01	Gulf Chelsea	Surface Water	09-Aug-17 08:30	09-Aug-17

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
General Chemistry Parameters													
	Total Organic Carbon	**2.70**		mg/l	1.00	0.238	1	SM5310B (00, 11)	16-Aug-17	16-Aug-17	RLT	1714115	X
Subcontracted Analyses													
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7440-43-9	Cadmium	< 0.20		µg/L	0.20	0.095	1	EPA 200.8	15-Aug-17 16:00	18-Aug-17 14:49	M-MA1	B184151	
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7440-50-8	Copper	**2.1**		µg/L	1.0	0.36	1	"	"	"	"	"	
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7439-92-1	Lead	**2.2**	RL-08, J	µg/L	2.5	0.69	5	"	"	18-Aug-17 09:30	"	"	
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7440-02-0	Nickel	**0.55**	J	µg/L	5.0	0.37	1	"	"	18-Aug-17 14:49	"	"	
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7440-66-6	Zinc	**6.4**	J	µg/L	20	4.9	1	"	"	"	"	"	
Subcontracted Analyses													
Prepared by method 397383													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
7664-41-7	Ammonia as Nitrogen	**0.18**		mg/L	0.05	0.05	1	E350.1		14-Aug-17 13:37	M-CT0	397383A	
Subconracted analyses													
Prepared by method NA													
Analysis performed by GZA Geoenvironmental, Inc. - Manchester, CT -*													
	Aquatic Toxicity	**See report**		N/A			1	EPA-821-B-00-004		10-Aug-17		'[none]'	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Outfall 003	Gulf Chelsea	Surface Water	09-Aug-17 09:00	09-Aug-17
SC37957-01				

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds													
Volatile Organic Compounds by SW846 8260 Prepared by method SW846 5030 Water MS													
71-43-2	Benzene	< 1.00		µg/l	1.00	0.28	1	SW846 8260C	10-Aug-17	10-Aug-17	GMA	1713787	
100-41-4	Ethylbenzene	< 1.00		µg/l	1.00	0.33	1	"	"	"	"	"	
1634-04-4	Methyl tert-butyl ether	< 1.00		µg/l	1.00	0.24	1	"	"	"	"	"	
91-20-3	Naphthalene	< 1.00		µg/l	1.00	0.35	1	"	"	"	"	"	
108-88-3	Toluene	< 1.00		µg/l	1.00	0.30	1	"	"	"	"	"	
75-01-4	Vinyl chloride	< 1.00		µg/l	1.00	0.47	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	< 2.00		µg/l	2.00	0.38	1	"	"	"	"	"	
95-47-6	o-Xylene	< 1.00		µg/l	1.00	0.28	1	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	< 10.0		µg/l	10.0	5.90	1	"	"	"	"	"	
64-17-5	Ethanol	< 200		µg/l	200	30.9	1	"	"	"	"	"	
Surrogate recoveries:													
460-00-4	*4-Bromofluorobenzene*	*101*			*70-130 %*			"	"	"	"	"	
2037-26-5	*Toluene-d8*	*102*			*70-130 %*			"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*94*			*70-130 %*			"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*99*			*70-130 %*			"	"	"	"	"	
Semivolatile Organic Compounds by GCMS													
Acid Extractables/Phenols Prepared by method SW846 3510C													
108-95-2	Phenol	< 0.639	U	µg/l	4.95	0.639	1	SW846 8270D	11-Aug-17	14-Aug-17	MSL	1713829	
Surrogate recoveries:													
367-12-4	*2-Fluorophenol*	*32*			*15-110 %*			"	"	"	"	"	
4165-62-2	*Phenol-d5*	*23*			*15-110 %*			"	"	"	"	"	
SVOCs by SIM			RSIM										
83-32-9	Acenaphthene	< 0.257		µg/l	0.257	0.257	1	SW846 8270D SIM	"	21-Aug-17	MSL	"	
208-96-8	Acenaphthylene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
120-12-7	Anthracene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perylene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
218-01-9	Chrysene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
206-44-0	Fluoranthene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
86-73-7	Fluorene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
91-20-3	Naphthalene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
85-01-8	Phenanthrene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
129-00-0	Pyrene	< 0.257		µg/l	0.257	0.257	1	"	"	"	"	"	
Surrogate recoveries:													
205440-82-0	*Benzo (e) pyrene-d12*	*77*			*30-130 %*			"	"	"	"	"	
Extractable Petroleum Hydrocarbons Prepared by method SW846 3510C													
	Oil & Grease	< 1.00	OG	mg/l	1.00	0.915	1	EPA 1664B	21-Aug-17	21-Aug-17	KK	1714306	X

This laboratory report is not valid without an authorized signature on the cover page.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Outfall 003 SC37957-01	Gulf Chelsea	Surface Water	09-Aug-17 09:00	09-Aug-17

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Total Metals by EPA 200/6000 Series Methods													
Prepared by method General Prep-Metal													
	Preservation	**Field Preserved; pH<2 confirmed**		N/A			1	EPA 200/6000 methods	09-Aug-17		AAW	1713756	
General Chemistry Parameters													
7782-50-5	Total Residual Chlorine	**0.025**	ClHT	mg/l	0.020	0.006	1	SM4500-Cl-G (11)	19-Aug-17 13:49	19-Aug-17 14:43	RLT	1714286	X
	pH	**8.26**	pH	pH Units			1	ASTM D 1293-99B	09-Aug-17 17:30	16-Aug-17 13:45	TN	1713764	X
	Salinity	< 1.00		ppt (1000)	1.00	0.144	1	SM 2520 (01)	16-Aug-17	16-Aug-17	BD	1714097	
	Total Solids	**250**		mg/l	5.00	1.53	1	SM2540 B (11)	10-Aug-17	15-Aug-17	CMB	1713791	
	Total Suspended Solids	**14.2**		mg/l	1.0	0.4	1	SM2540D (11)	10-Aug-17	11-Aug-17	CMB	1713788	X
	Total Organic Carbon	**5.86**		mg/l	1.00	0.238	1	SM5310B (00, 11)	16-Aug-17	16-Aug-17	RLT	1714115	X
Subcontracted Analyses													
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7440-43-9	Cadmium	< 0.20		µg/L	0.20	0.095	1	EPA 200.8	15-Aug-17 16:00	18-Aug-17 14:37	M-MA1	B184151	
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7440-50-8	Copper	**5.6**		µg/L	1.0	0.36	1	"	"	"	"	"	
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7439-92-1	Lead	**8.0**		µg/L	0.50	0.14	1	"	"	"	"	"	
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7440-02-0	Nickel	**4.0**	J	µg/L	5.0	0.37	1	"	"	"	"	"	
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7440-66-6	Zinc	**17**	J	µg/L	20	4.9	1	"	"	"	"	"	
Subcontracted Analyses													
Prepared by method 397383													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
7664-41-7	Ammonia as Nitrogen	**0.50**		mg/L	0.05	0.05	1	E350.1		14-Aug-17 13:36	CT007	397383A	
Subconracted analyses													
Prepared by method NA													
Analysis performed by GZA Geoenvironmental, Inc. - Manchester, CT -*													
	Aquatic Toxicity	**See report**		N/A			1	EPA-821-B-00-004		10-Aug-17		'[none]'	
Subcontracted Analyses													
Analysis performed by Con-Test Analytical Laboratory - M-MA1													
7440-47-3	Chromium	**5.6**	J	µg/L	10	0.51	1	EPA 200.8	15-Aug-17 16:00	18-Aug-17 14:37	M-MA1	B184151	
Subcontracted Analyses													
*Analysis performed by Phoenix Environmental Labs, Inc. * - MACT007*													
	Fecal Coliforms	**45**	Q1	/100 mls	10	10	10	SW9222D-06		10-Aug-17 13:15	CT007	'[none]'	

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 1713787 - SW846 5030 Water MS										
Blank (1713787-BLK1)					Prepared & Analyzed: 10-Aug-17					
Benzene	< 1.0		µg/l	1.0						
Benzene	< 1.00		µg/l	1.00						
Ethylbenzene	< 1.0		µg/l	1.0						
Ethylbenzene	< 1.00		µg/l	1.00						
Methyl tert-butyl ether	< 1.00		µg/l	1.00						
Naphthalene	< 1.0		µg/l	1.0						
Naphthalene	< 1.00		µg/l	1.00						
Toluene	< 1.0		µg/l	1.0						
Toluene	< 1.00		µg/l	1.00						
m,p-Xylene	< 2.0		µg/l	2.0						
Vinyl chloride	< 1.00		µg/l	1.00						
o-Xylene	< 1.0		µg/l	1.0						
m,p-Xylene	< 2.00		µg/l	2.00						
o-Xylene	< 1.00		µg/l	1.00						
Tert-Butanol / butyl alcohol	< 10.0		µg/l	10.0						
Ethanol	< 200		µg/l	200						
Surrogate: 4-Bromofluorobenzene	*50.1*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: 4-Bromofluorobenzene	*50.1*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: Toluene-d8	*50.8*		µg/l		*50.0*		*102*	*70-130*		
Surrogate: Toluene-d8	*50.8*		µg/l		*50.0*		*102*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*47.5*		µg/l		*50.0*		*95*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*47.5*		µg/l		*50.0*		*95*	*70-130*		
Surrogate: Dibromofluoromethane	*50.5*		µg/l		*50.0*		*101*	*70-130*		
Surrogate: Dibromofluoromethane	*50.5*		µg/l		*50.0*		*101*	*70-130*		
LCS (1713787-BS1)					Prepared & Analyzed: 10-Aug-17					
Benzene	**22.3**		µg/l		20.0		111	70-130		
Benzene	**22.3**		µg/l		20.0		111	70-130		
Ethylbenzene	**20.9**		µg/l		20.0		104	70-130		
Ethylbenzene	**20.9**		µg/l		20.0		104	70-130		
Methyl tert-butyl ether	**15.0**		µg/l		20.0		75	70-130		
Naphthalene	**19.9**		µg/l		20.0		100	70-130		
Naphthalene	**19.9**		µg/l		20.0		100	70-130		
Toluene	**21.3**		µg/l		20.0		107	70-130		
Toluene	**21.3**		µg/l		20.0		107	70-130		
m,p-Xylene	**21.0**		µg/l		20.0		105	70-130		
Vinyl chloride	**20.9**		µg/l		20.0		104	70-130		
o-Xylene	**22.0**		µg/l		20.0		110	70-130		
m,p-Xylene	**21.0**		µg/l		20.0		105	70-130		
o-Xylene	**22.0**		µg/l		20.0		110	70-130		
Tert-Butanol / butyl alcohol	**127**	QM9	µg/l		200		63	70-130		
Ethanol	**296**		µg/l		400		74	70-130		
Surrogate: 4-Bromofluorobenzene	*50.4*		µg/l		*50.0*		*101*	*70-130*		
Surrogate: 4-Bromofluorobenzene	*50.4*		µg/l		*50.0*		*101*	*70-130*		
Surrogate: Toluene-d8	*51.0*		µg/l		*50.0*		*102*	*70-130*		
Surrogate: Toluene-d8	*51.0*		µg/l		*50.0*		*102*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*47.2*		µg/l		*50.0*		*94*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*47.2*		µg/l		*50.0*		*94*	*70-130*		
Surrogate: Dibromofluoromethane	*51.0*		µg/l		*50.0*		*102*	*70-130*		
Surrogate: Dibromofluoromethane	*51.0*		µg/l		*50.0*		*102*	*70-130*		
LCS Dup (1713787-BSD1)					Prepared & Analyzed: 10-Aug-17					

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8260C										
Batch 1713787 - SW846 5030 Water MS										
LCS Dup (1713787-BSD1)					Prepared & Analyzed: 10-Aug-17					
Benzene	**21.8**		µg/l		20.0		109	70-130	2	20
Benzene	**21.8**		µg/l		20.0		109	70-130	2	20
Ethylbenzene	**19.9**		µg/l		20.0		99	70-130	5	20
Ethylbenzene	**19.9**		µg/l		20.0		99	70-130	5	20
Methyl tert-butyl ether	**15.6**		µg/l		20.0		78	70-130	4	20
Naphthalene	**20.2**		µg/l		20.0		101	70-130	2	20
Naphthalene	**20.2**		µg/l		20.0		101	70-130	2	20
Toluene	**20.4**		µg/l		20.0		102	70-130	4	20
Toluene	**20.4**		µg/l		20.0		102	70-130	4	20
Vinyl chloride	**20.2**		µg/l		20.0		101	70-130	3	20
m,p-Xylene	**19.8**		µg/l		20.0		99	70-130	6	20
m,p-Xylene	**19.8**		µg/l		20.0		99	70-130	6	20
o-Xylene	**20.9**		µg/l		20.0		104	70-130	5	20
o-Xylene	**20.9**		µg/l		20.0		104	70-130	5	20
Tert-Butanol / butyl alcohol	**142**		µg/l		200		71	70-130	11	20
Ethanol	**296**		µg/l		400		74	70-130	0.07	20
Surrogate: 4-Bromofluorobenzene	*51.3*		µg/l		*50.0*		*103*	*70-130*		
Surrogate: 4-Bromofluorobenzene	*51.3*		µg/l		*50.0*		*103*	*70-130*		
Surrogate: Toluene-d8	*51.7*		µg/l		*50.0*		*103*	*70-130*		
Surrogate: Toluene-d8	*51.7*		µg/l		*50.0*		*103*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*47.6*		µg/l		*50.0*		*95*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*47.6*		µg/l		*50.0*		*95*	*70-130*		
Surrogate: Dibromofluoromethane	*50.4*		µg/l		*50.0*		*101*	*70-130*		
Surrogate: Dibromofluoromethane	*50.4*		µg/l		*50.0*		*101*	*70-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 1713829 - SW846 3510C										
Blank (1713829-BLK1)					Prepared: 11-Aug-17 Analyzed: 14-Aug-17					
4-Chloro-3-methylphenol	< 0.501	U	µg/l	0.501						
2-Chlorophenol	< 0.748	U	µg/l	0.748						
2,4-Dichlorophenol	< 0.530	U	µg/l	0.530						
2,4-Dimethylphenol	< 0.653	U	µg/l	0.653						
4,6-Dinitro-2-methylphenol	< 0.319	U	µg/l	0.319						
2,4-Dinitrophenol	< 0.561	U	µg/l	0.561						
2-Methylphenol	< 0.665	U	µg/l	0.665						
3 & 4-Methylphenol	< 0.615	U	µg/l	0.615						
2-Nitrophenol	< 0.465	U	µg/l	0.465						
4-Nitrophenol	< 0.838	U	µg/l	0.838						
Pentachlorophenol	< 0.373	U	µg/l	0.373						
Phenol	< 0.645	U	µg/l	0.645						
2,4,5-Trichlorophenol	< 0.520	U	µg/l	0.520						
2,4,6-Trichlorophenol	< 0.518	U	µg/l	0.518						
Surrogate: 2-Fluorophenol	*16.4*		µg/l		*50.0*		*33*	*15-110*		
Surrogate: Phenol-d5	*12.2*		µg/l		*50.0*		*24*	*15-110*		
LCS (1713829-BS1)					Prepared: 11-Aug-17 Analyzed: 14-Aug-17					
4-Chloro-3-methylphenol	**27.2**		µg/l	0.506	50.5		54	30-130		
2-Chlorophenol	**25.0**		µg/l	0.756	50.5		49	30-130		
2,4-Dichlorophenol	**27.0**		µg/l	0.535	50.5		53	30-130		
2,4-Dimethylphenol	**25.6**		µg/l	0.660	50.5		51	30-130		
4,6-Dinitro-2-methylphenol	**31.1**		µg/l	0.322	50.5		62	30-130		
2,4-Dinitrophenol	**28.4**		µg/l	0.567	50.5		56	30-130		
2-Methylphenol	**24.5**		µg/l	0.672	50.5		48	30-130		
3 & 4-Methylphenol	**24.1**		µg/l	0.621	50.5		48	30-130		
2-Nitrophenol	**27.5**		µg/l	0.470	50.5		54	30-130		
4-Nitrophenol	**30.8**		µg/l	0.846	50.5		61	30-130		
Pentachlorophenol	**25.6**		µg/l	0.377	50.5		51	30-130		
Phenol	**12.2**	QC2	µg/l	0.652	50.5		24	30-130		
2,4,5-Trichlorophenol	**33.8**		µg/l	0.525	50.5		67	30-130		
2,4,6-Trichlorophenol	**28.6**		µg/l	0.523	50.5		57	30-130		
Surrogate: 2-Fluorophenol	*15.6*		µg/l		*50.5*		*31*	*15-110*		
Surrogate: Phenol-d5	*11.9*		µg/l		*50.5*		*24*	*15-110*		
LCS Dup (1713829-BSD1)					Prepared: 11-Aug-17 Analyzed: 14-Aug-17					
4-Chloro-3-methylphenol	**25.4**		µg/l	0.501	50.0		51	30-130	7	20
2-Chlorophenol	**24.0**		µg/l	0.748	50.0		48	30-130	4	20
2,4-Dichlorophenol	**25.3**		µg/l	0.530	50.0		51	30-130	6	20
2,4-Dimethylphenol	**24.7**		µg/l	0.653	50.0		49	30-130	3	20
4,6-Dinitro-2-methylphenol	**29.7**		µg/l	0.319	50.0		59	30-130	4	20
2,4-Dinitrophenol	**27.7**		µg/l	0.561	50.0		55	30-130	3	20
2-Methylphenol	**22.8**		µg/l	0.665	50.0		46	30-130	7	20
3 & 4-Methylphenol	**23.2**		µg/l	0.615	50.0		46	30-130	4	20
2-Nitrophenol	**26.3**		µg/l	0.465	50.0		53	30-130	4	20
4-Nitrophenol	**29.5**		µg/l	0.838	50.0		59	30-130	4	20
Pentachlorophenol	**24.6**		µg/l	0.373	50.0		49	30-130	4	20
Phenol	**11.7**	QC2	µg/l	0.645	50.0		23	30-130	4	20
2,4,5-Trichlorophenol	**31.0**		µg/l	0.520	50.0		62	30-130	9	20
2,4,6-Trichlorophenol	**26.2**		µg/l	0.518	50.0		52	30-130	9	20
Surrogate: 2-Fluorophenol	*15.1*		µg/l		*50.0*		*30*	*15-110*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D										
Batch 1713829 - SW846 3510C										
LCS Dup (1713829-BSD1)						Prepared: 11-Aug-17 Analyzed: 14-Aug-17				
Surrogate: Phenol-d5	*11.6*		µg/l		*50.0*		*23*	*15-110*		
SW846 8270D SIM										
Batch 1713829 - SW846 3510C										
Blank (1713829-BLK2)						Prepared: 11-Aug-17 Analyzed: 21-Aug-17				
Acenaphthene	< 0.050		µg/l	0.050						
Acenaphthylene	< 0.050		µg/l	0.050						
Anthracene	< 0.050		µg/l	0.050						
Benzo (a) anthracene	< 0.050		µg/l	0.050						
Benzo (a) pyrene	< 0.050		µg/l	0.050						
Benzo (b) fluoranthene	< 0.050		µg/l	0.050						
Benzo (g,h,i) perylene	< 0.050		µg/l	0.050						
Benzo (k) fluoranthene	< 0.050		µg/l	0.050						
Chrysene	< 0.050		µg/l	0.050						
Dibenzo (a,h) anthracene	< 0.050		µg/l	0.050						
Fluoranthene	< 0.050		µg/l	0.050						
Fluorene	< 0.050		µg/l	0.050						
Indeno (1,2,3-cd) pyrene	< 0.050		µg/l	0.050						
Naphthalene	< 0.050		µg/l	0.050						
Phenanthrene	< 0.050		µg/l	0.050						
Pyrene	< 0.050		µg/l	0.050						
Surrogate: Benzo (e) pyrene-d12	*0.840*		µg/l		*1.00*		*84*	*30-130*		
LCS (1713829-BS2)						Prepared: 11-Aug-17 Analyzed: 21-Aug-17				
Acenaphthene	**0.297**	QC2	µg/l	0.050	1.00		30	40-140		
Acenaphthylene	**0.288**	QC2	µg/l	0.050	1.00		29	40-140		
Anthracene	**0.364**	QM9	µg/l	0.050	1.00		36	40-140		
Benzo (a) anthracene	**0.518**		µg/l	0.050	1.00		52	40-140		
Benzo (a) pyrene	**0.641**		µg/l	0.050	1.00		64	40-140		
Benzo (b) fluoranthene	**0.687**		µg/l	0.050	1.00		69	40-140		
Benzo (g,h,i) perylene	**0.539**		µg/l	0.050	1.00		54	40-140		
Benzo (k) fluoranthene	**0.546**		µg/l	0.050	1.00		55	40-140		
Chrysene	**0.470**		µg/l	0.050	1.00		47	40-140		
Dibenzo (a,h) anthracene	**0.653**		µg/l	0.050	1.00		65	40-140		
Fluoranthene	**0.465**		µg/l	0.050	1.00		46	40-140		
Fluorene	**0.368**	QM9	µg/l	0.050	1.00		37	40-140		
Indeno (1,2,3-cd) pyrene	**0.789**		µg/l	0.050	1.00		79	40-140		
Naphthalene	**0.268**	QC2	µg/l	0.050	1.00		27	40-140		
Phenanthrene	**0.346**	QM9	µg/l	0.050	1.00		35	40-140		
Pyrene	**0.463**		µg/l	0.050	1.00		46	40-140		
Surrogate: Benzo (e) pyrene-d12	*0.750*		µg/l		*1.00*		*75*	*30-130*		
LCS Dup (1713829-BSD2)						Prepared: 11-Aug-17 Analyzed: 21-Aug-17				
Acenaphthene	**0.332**	QC2	µg/l	0.050	1.00		33	40-140	11	20
Acenaphthylene	**0.343**	QC2	µg/l	0.050	1.00		34	40-140	17	20
Anthracene	**0.425**		µg/l	0.050	1.00		42	40-140	15	20
Benzo (a) anthracene	**0.622**		µg/l	0.050	1.00		62	40-140	18	20
Benzo (a) pyrene	**0.747**		µg/l	0.050	1.00		75	40-140	15	20
Benzo (b) fluoranthene	**0.724**		µg/l	0.050	1.00		72	40-140	5	20
Benzo (g,h,i) perylene	**0.647**		µg/l	0.050	1.00		65	40-140	18	20
Benzo (k) fluoranthene	**0.662**		µg/l	0.050	1.00		66	40-140	19	20
Chrysene	**0.545**		µg/l	0.050	1.00		54	40-140	15	20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
SW846 8270D SIM										
Batch 1713829 - SW846 3510C										
LCS Dup (1713829-BSD2)					Prepared: 11-Aug-17 Analyzed: 21-Aug-17					
Dibenzo (a,h) anthracene	**0.768**		µg/l	0.050	1.00		77	40-140	16	20
Fluoranthene	**0.510**		µg/l	0.050	1.00		51	40-140	9	20
Fluorene	**0.410**		µg/l	0.050	1.00		41	40-140	11	20
Indeno (1,2,3-cd) pyrene	**0.876**		µg/l	0.050	1.00		88	40-140	10	20
Naphthalene	**0.307**	QC2	µg/l	0.050	1.00		31	40-140	14	20
Phenanthrene	**0.425**		µg/l	0.050	1.00		42	40-140	20	20
Pyrene	**0.566**		µg/l	0.050	1.00		57	40-140	20	20
Surrogate: Benzo (e) pyrene-d12	*0.860*		µg/l		*1.00*		*86*	*30-130*		

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 1664B										
Batch 1714306 - SW846 3510C										
Blank (1714306-BLK1)						Prepared & Analyzed: 21-Aug-17				
Oil & Grease	< 1.00		mg/l	1.00						
LCS (1714306-BS1)						Prepared & Analyzed: 21-Aug-17				
Oil & Grease	**31.3**		mg/l	1.00	39.7		79	78-114		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
ASTM D 1293-99B										
Batch 1713764 - General Preparation										
Duplicate (1713764-DUP1)			**Source: SC37957-01**			Prepared: 09-Aug-17 Analyzed: 16-Aug-17				
pH	**8.25**		pH Units			8.26			0.1	5
Reference (1713764-SRM1)						Prepared: 09-Aug-17 Analyzed: 16-Aug-17				
pH	**6.01**		pH Units		6.00		100	97.5-102.5		
Reference (1713764-SRM2)						Prepared: 09-Aug-17 Analyzed: 16-Aug-17				
pH	**5.99**		pH Units		6.00		100	97.5-102.5		
SM 2520 (01)										
Batch 1714097 - General Preparation										
Duplicate (1714097-DUP1)			**Source: SC37956-01**			Prepared & Analyzed: 16-Aug-17				
Salinity	**27.8**		ppt (1000)	1.00		27.8			0.07	10
Reference (1714097-SRM1)						Prepared & Analyzed: 16-Aug-17				
Salinity	**10.0**		ppt (1000)	1.00	10.0		100	90-110		
Reference (1714097-SRM2)						Prepared & Analyzed: 16-Aug-17				
Salinity	**10.1**		ppt (1000)	1.00	10.0		101	90-110		
SM2540 B (11)										
Batch 1713791 - General Preparation										
Blank (1713791-BLK1)						Prepared: 10-Aug-17 Analyzed: 15-Aug-17				
Total Solids	< 5.00		mg/l	5.00						
LCS (1713791-BS1)						Prepared: 10-Aug-17 Analyzed: 15-Aug-17				
Total Solids	**1140**		mg/l	10.0	1100		104	90-110		
Duplicate (1713791-DUP1)			**Source: SC37956-01**			Prepared: 10-Aug-17 Analyzed: 15-Aug-17				
Total Solids	**38900**		mg/l	100		38500			1	5
SM2540D (11)										
Batch 1713788 - General Preparation										
Blank (1713788-BLK1)						Prepared: 10-Aug-17 Analyzed: 11-Aug-17				
Total Suspended Solids	< 0.5		mg/l	0.5						
LCS (1713788-BS1)						Prepared: 10-Aug-17 Analyzed: 11-Aug-17				
Total Suspended Solids	**94.0**		mg/l	10.0	100		94	90-110		
SM4500-Cl-G (11)										
Batch 1714286 - General Preparation										
Blank (1714286-BLK1)						Prepared & Analyzed: 19-Aug-17				
Total Residual Chlorine	< 0.020		mg/l	0.020						
LCS (1714286-BS1)						Prepared & Analyzed: 19-Aug-17				
Total Residual Chlorine	**0.052**		mg/l	0.020	0.0500		104	90-110		
Reference (1714286-SRM1)						Prepared & Analyzed: 19-Aug-17				
Total Residual Chlorine	**0.110**		mg/l	0.020	0.105		105	85-115		
SM5310B (00, 11)										
Batch 1714115 - General Preparation										
Blank (1714115-BLK1)						Prepared & Analyzed: 16-Aug-17				
Total Organic Carbon	< 1.00		mg/l	1.00						
LCS (1714115-BS1)						Prepared & Analyzed: 16-Aug-17				
Total Organic Carbon	**14.3**		mg/l	1.00	15.0		95	85-115		
Reference (1714115-SRM1)						Prepared & Analyzed: 16-Aug-17				
Total Organic Carbon	**8.48**		mg/l	1.00	9.42		90	85-115		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 200.8										
Batch B184151 - EPA 200.8										
Blank (B184151-BLK1)						Prepared: 15-Aug-17 Analyzed: 18-Aug-17				
Cadmium	**ND**		µg/L	0.20				-		
Copper	**ND**		µg/L	0.36				-		
Lead	**ND**		µg/L	0.14				-		
Nickel	**ND**		µg/L	0.37				-		
Zinc	**ND**		µg/L	4.9				-		
LCS (B184151-BS1)						Prepared: 15-Aug-17 Analyzed: 18-Aug-17				
Zinc	**258**		µg/L	24	250		103	85-115		
Nickel	**254**		µg/L	1.9	250		102	85-115		
Lead	**260**		µg/L	0.69	250		104	85-115		
Cadmium	**256**		µg/L	1.0	250		102	85-115		
Copper	**253**		µg/L	1.8	250		101	85-115		
LCS Dup (B184151-BSD1)						Prepared: 15-Aug-17 Analyzed: 18-Aug-17				
Cadmium	**270**		µg/L	1.0	250		108	85-115	5.50	20
Nickel	**275**		µg/L	1.9	250		110	85-115	7.99	20
Lead	**277**		µg/L	0.69	250		111	85-115	6.33	20
Copper	**273**		µg/L	1.8	250		109	85-115	7.57	20
Zinc	**281**		µg/L	24	250		112	85-115	8.37	20
Duplicate (B184151-DUP1)			**Source: SC37956-01**			Prepared: 15-Aug-17 Analyzed: 18-Aug-17				
Zinc	**6.17**	J	µg/L	4.9		6.39		-	3.56	20
Lead	**2.20**	RL-08, J	µg/L	0.69		2.17		-	1.29	20
Cadmium	**ND**		µg/L	0.20		BRL		-		20
Copper	**1.64**	R-02	µg/L	0.36		2.10		-	24.7	20
Nickel	**0.632**	J	µg/L	0.37		0.551		-	13.7	20
Matrix Spike (B184151-MS1)			**Source: SC37956-01**			Prepared: 15-Aug-17 Analyzed: 18-Aug-17				
Zinc	**240**		µg/L	24	250	ND	95.9	70-130		
Nickel	**233**		µg/L	1.9	250	ND	93.3	70-130		
Lead	**263**		µg/L	0.69	250	2.17	104	70-130		
Copper	**228**		µg/L	1.8	250	2.10	90.5	70-130		
Cadmium	**232**		µg/L	1.0	250	BRL	92.9	70-130		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
E350.1										
Batch 397383A - 397383										
BLK (BY81991-BLK)						Prepared: 11-Aug-17 Analyzed: 14-Aug-17				
Ammonia as Nitrogen	< 0.05		mg/L	0.05				-		
DUP (BY81991-DUP)			**Source: BY81991**			Prepared: 11-Aug-17 Analyzed: 14-Aug-17				
Ammonia as Nitrogen	**0.13**		mg/L	0.05				-	NC	20
LCS (BY81991-LCS)						Prepared: 11-Aug-17 Analyzed: 14-Aug-17				
Ammonia as Nitrogen	**3.770**		mg/L	0.05	3.74		101	90-110		20
MS (BY81991-MS)			**Source: BY81991**			Prepared: 11-Aug-17 Analyzed: 14-Aug-17				
Ammonia as Nitrogen	**2.140**		mg/L	0.05	2		101	90-110		20

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
EPA 200.8										
Batch B184151 - EPA 200.8										
Blank (B184151-BLK1)						Prepared: 15-Aug-17 Analyzed: 18-Aug-17				
Chromium	**ND**		µg/L	0.51				-		
LCS (B184151-BS1)						Prepared: 15-Aug-17 Analyzed: 18-Aug-17				
Chromium	**259**		µg/L	2.5	250		103	85-115		
LCS Dup (B184151-BSD1)						Prepared: 15-Aug-17 Analyzed: 18-Aug-17				
Chromium	**276**		µg/L	2.5	250		110	85-115	6.47	20

Notes and Definitions

J	[Undefined]
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
Q1	Received past hold time for Fecal Coliforms
QC2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
R-02	Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.
RL-08	Elevated reporting limit due to sample matrix interference. MA CAM reporting limit not met.
RSIM	Client requested reporting limits can not be met due to interferences present in sample; requested reporting limits cannot be met because re-extraction is required and there is insufficient sample volume to complete this.
U	Analyte included in the analysis, but not detected at or above the MDL.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
ClHT	The method for residual chlorine indicates that samples should be analyzed immediately. 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous residual chlorine samples not analyzed in the field are considered out of hold time at the time of sample receipt.
OG	The required Matrix Spike and Matrix Spike Duplicate (MS/MSD) for Oil & Grease method 1664B can only be analyzed when the client has submitted sufficient sample volume. An extra liter per MS/MSD is required to fulfill the method QC criteria. Please refer to Chain of Custody and QC Summary (MS/MSD) of the Laboratory Report to verify ample sample volume was submitted to fulfill the requirement.
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.
LIV	The initial volume for this sample has been reduced due to sample matrix and/or historical data therefore elevating the reporting limit.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.

New England Bioassay

A Division of GZA

GEOTECHNICAL
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ACUTE AQUATIC TOXICITY TEST REPORT

Chelsea Sandwich, LLC
Chelsea Sandwich Terminal
Chelsea, MA

Test Start Date: 8/10/17

Test Period: August 2017

Report Prepared by:

New England Bioassay
A Division of GZA GeoEnvironmental, Inc.
77 Batson Dr.
Manchester, CT 06042

NEB Project Number: 05.0045458.00

Report Date: September 8, 2017

Report Submitted to:

Eurofins Spectrum Analytical, Inc.
11 Almgren Drive
Agawam, MA 01001

Sample ID: SC37956-01, SC37957-01

Whole Effluent Toxicity Testing Report Instruction Form

Client Name/Project: Eurofins / Chelsea Sandwich Terminal Test Date: 8/10/17

Sample ID: SC37956-01, SC37957-01

Your results were as follows:

☒ Monitoring Only

□ Fail – Please proceed according to the instructions in your permit.

□ Invalid – **Retesting is still required. Retest report will be sent at a later date under separate cover.**

□ Original Test Invalid – **Valid retest performed. Both test and retest results are attached.**

□ Retesting will be or has been performed according to the Case 1 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water.

□ This is your _____ case of dilution water toxicity. Please proceed according to the Case 2 Protocols outlined in the attached copy of EPA-New England's species-specific, self-implementing policy for alternate dilution water. The alternate dilution water you select for future tests for this species should be described as follows: "synthetic laboratory water made up according to EPA's toxicity test protocols, by adding specified amounts of salts into deionized water in order to match the hardness of our receiving water." Writing this letter should help you to avoid retests in the future.

□ Available information is insufficient to determine whether this test passed or failed. Please compare results to your permit limits. Please submit a current copy of your permit to the NEB Lab so that we can determine the status of future tests results and help ensure your compliance with permit requirements.

Please complete the items on this list before reporting these results according to the instructions in the "Monitoring and Reporting" Section of your permit.

- Please complete, sign and date the upper portion of the "Whole Effluent Toxicity Test Report Certification" page which is the page directly following this page.
- Fill in the Sample Type and Sample Method (upper right) and the Permit Limits (lower left) on the New England Bioassay - EPA Toxicity Test Summary Sheet(s) if they are incomplete.
- Fill in any missing information on the NEB Chain-of-Custody documents. This includes ensuring that the following information is recorded: Sampler's name and title, Facility name and address, Sample collection methods, Sample collection start and end dates and times, Types of sample, Chlorination status of samples upon shipment to NEB, Site description and Sample collection procedures.
- Monitoring results should be summarized on your monthly Discharge Monitoring Report Form.
- Signed and dated originals of this report must be submitted to the State (and Federal) Agencies specified in the "Monitoring and Reporting" section of your permit.

Questions? Please contact the Lab Manager, Kim Wills, at (860) 858-3153 or kimberly.wills@gza.com.

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Permittee)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on _____ _____

[Date] [Authorized Signature]

_____

[Print or Type Name and Title]

_____

[Print or Type the Permittee's Name]

_____

[Print or Type the NPDES Permit No.]

Since the WET test and report check is complicated, the New England Bioassay Aquatic Toxicity Laboratory has certified the validity of the WET test data in the section below. Please note that this does not relieve the permittee from its responsibility to sign and certify the report under 40 C.F.R. S 122.41(k).

WHOLE EFFLUENT TOXICITY TEST REPORT CERTIFICATION (Bioassay Laboratory)

I certify under penalty of law that this document and all ATTACHMENTS were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on 9/8/17 _____

[Date] [Authorized Signature]

Kim Wills, Laboratory Manager

[Print or Type Name and Title]

New England Bioassay

[Print or Type Name of Bioassay Laboratory]

24. Telephone Contacts

If you have questions, please contact Joy Hilton, Water Technical Unit, at (617) 918-1877 or David McDonald, Ecosystem Assessment Unit, at (617) 918-8609.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET

Facility Name: Chelsea Sandwich Terminal Test Start Date: 8/10/17
NPDES Permit Number: MA0003280 Outfall Number: 003

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	X Grab
_ Chronic	_ Ceriodaphnia Dubia	_ Dechlorinated	_ Composite
_ Modified	_ Daphnia Pulex	_ Unchlorinated	_ Flow-thru
(Chronic reporting	X Mysid Shrimp	_ Chlorinated	_ Other
LC50 values)	_ Sheepshead		
_ 24-Hour Screening	_ Menidia		
	_ Sea Urchin	TRC conc. 0.066 mg/L	
	_ Selenastrum		
	_Other_____		

Dilution Water

X Receiving water collected at a point immediately upstream of or away from the discharge;
(Receiving water name and sampling location: Chelsea River)
_ Alternate Surface Water of known quality and a hardness to generally reflect the characteristics of the receiving water; (Surface water name:_____)
_ Synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;
_ Artificial sea salts mixed with deionized water;
_ Other_____

Effluent Sampling Date(s): 8/9/17

Effluent Concentrations Tested (in%): 0 6.25 12.5 25 50 100
* (Permit Limit Concentration): monitoring only

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt

Reference Toxicant test date: 8/1/17 Reference Toxicant Test Acceptable: Yes X No _

Age and Age Range of Test Organisms 3 days (< 24 hours) Source of Organisms NEB

TEST RESULTS &PERMIT LIMITS

Test Acceptability Criteria

A. Synthetic Water Control
Mean Control Survival: 100% Mean Control Reproduction: N/A
Mean Control Weight: N/A Mean Control % Fertilization: N/A

B. Receiving Water Control
Mean Control Survival: 100% Mean Control Reproduction: N/A
Mean Control Weight: N/A Mean Control % Fertilization: N/A

C. Lab Culture Control Yes_ No X

D. Thiosulfate Control Yes_ No X

Test Variability

Test PMSD (growth) N/A
Test PMSD (reproduction.) N/A

Permit Limits & Test Results

	Limits		Results
LC50	N/A	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	N/A
		LOEC	N/A
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

PMSD Comparison Discussion – N/A

Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

X 1. Ideal concentration-response relationship
_ 2. All or nothing response
_ 3. Stimulatory response at low concentrations and detrimental effects at higher concentrations
_ 4. Stimulation at low concentrations but no significant effect at higher concentrations
_ 5. Interrupted concentration-response: significant effects bracketed by non-significant effects
_ 6. Interrupted concentration-response: non-significant effects bracketed by significant effects
_ 7. Significant effects only at highest concentration
_ 8. Significant effects at all test concentrations but flat concentration-response curve
_ 9. Significant effects at all test concentrations with a sloped concentration-response curve
_ 10. Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

X 1. Results are reliable and should be reported.
_ 2. Results are anomalous. An explanation is provided in the body of the report.
_ 3. Results are inconclusive and the test should be repeated with a newly collected sample. An explanation is provided in the body of the report.

NEW ENGLAND BIOASSAY, A DIVISION OF GZA EPA TEST SUMMARY SHEET

Facility Name: Chelsea Sandwich Terminal Test Start Date: 8/10/17
NPDES Permit Number: MA0003280 Outfall Number: 003

Test Type	Test Species	Sample Type	Sample Method
X Acute	_ Fathead Minnow	_ Prechlorinated	X Grab
_ Chronic	_ Ceriodaphnia Dubia	_ Dechlorinated	_ Composite
_ Modified	_ Daphnia Pulex	_ Unchlorinated	_ Flow-thru
(Chronic reporting	_ Mysid Shrimp	_ Chlorinated	_ Other
LC50 values)	_ Sheepshead		
_ 24-Hour Screening	X Menidia		
	_ Sea Urchin	TRC conc. 0.066 mg/L	
	_ Selenastrum		
	_Other_____		

Dilution Water

X Receiving water collected at a point immediately upstream of or away from the discharge;
(Receiving water name and sampling location: Chelsea River)
_ Alternate Surface Water of known quality and a hardness to generally reflect the characteristics of the receiving water; (Surface water name:_____)
_ Synthetic water prepared using either Millipore Mill-Q or equivalent deionized water and reagent grade chemicals; or deionized water combined with mineral water;
_ Artificial sea salts mixed with deionized water;
_ Other_____

Effluent Sampling Date(s): 8/9/17

Effluent Concentrations Tested (in%): 0 6.25 12.5 25 50 100
* (Permit Limit Concentration): monitoring only

Was effluent salinity adjusted? Yes If yes, to what value? 25 ppt

Reference Toxicant test date: 8/16/17 Reference Toxicant Test Acceptable: Yes X No _

Age and Age Range of Test Organisms 11 days (<24 hours) Source of Organisms ABS

TEST RESULTS &PERMIT LIMITS

Test Acceptability Criteria

A. Synthetic Water Control
Mean Control Survival: 100% Mean Control Reproduction: N/A
Mean Control Weight: N/A Mean Control % Fertilization: N/A

B. Receiving Water Control
Mean Control Survival: 100% Mean Control Reproduction: N/A
Mean Control Weight: N/A Mean Control % Fertilization: N/A

C. Lab Culture Control Yes_ No X

D. Thiosulfate Control Yes_ No X

Test Variability

Test PMSD (growth) N/A
Test PMSD (reproduction.) N/A

Permit Limits & Test Results

	Limits		Results
LC50	N/A	LC50	>100%
		Upper Value	±∞
		Lower Value	100%
		Data Analysis Method Used	Graphical
A-NOEC	N/A	A-NOEC	100%
C-NOEC	N/A	C-NOEC	N/A
		LOEC	N/A
IC25	N/A	IC25	-------
IC50	N/A	IC50	-------

PMSD Comparison Discussion – N/A

Concentration-Response Evaluation

The concentration-response relationship observed in this data set corresponds to the following item number in Chapter Four of "Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)", EPA 821-B-00-004, July 2000:

X 1. Ideal concentration-response relationship
_ 2. All or nothing response
_ 3. Stimulatory response at low concentrations and detrimental effects at higher concentrations
_ 4. Stimulation at low concentrations but no significant effect at higher concentrations
_ 5. Interrupted concentration-response: significant effects bracketed by non-significant effects
_ 6. Interrupted concentration-response: non-significant effects bracketed by significant effects
_ 7. Significant effects only at highest concentration
_ 8. Significant effects at all test concentrations but flat concentration-response curve
_ 9. Significant effects at all test concentrations with a sloped concentration-response curve
_ 10. Inverse concentration-response relationship

The concentration-response relationship was reviewed according to the above guidance document and the following determination was made:

X 1. Results are reliable and should be reported.
_ 2. Results are anomalous. An explanation is provided in the body of the report.
_ 3. Results are inconclusive and the test should be repeated with a newly collected sample. An explanation is provided in the body of the report.

MYSIDOPSIS BAHIA AQUATIC TOXICITY TEST REPORT

Test Reference Manual:	EPA 821-R-02-012, "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater Organisms and Marine Organisms", Fifth Edition
Test Method:	*Mysidopsis bahia* Acute Toxicity Test – Method 2007.0
Test Type:	Acute Static Non-Renewal Saltwater Test
Salinity:	25 ppt ± 10% for all dilutions by dry ocean salts (Instant Ocean)
Temperature :	25 ± 1°C
Light Quality:	Ambient Laboratory Illumination
Photoperiod:	16 hours light, 8 hours dark
Test Chamber Size:	250 mL
Test Solution Volume:	Minimum 200 mL
Age of Test Organisms:	3 days
Number of Mysids Per Test Chamber:	10
Number of Replicate Test Chambers Per Treatment:	4
Total Number of Mysids Per Test Concentration:	40
Feeding Regime:	Light feeding using concentrated *Artemia* nauplii while holding prior to initiating the test.
Aeration:	Aerated at <100 bubbles/minute
Dilution Water:	Chelsea River
Alternate Control Water:	NEB Artificial Salt Water (salinity 24 ppt)
Effluent Concentrations:	0%, 6.25%, 12.5%, 25%, 50% and 100% effluent
Test Duration:	48 hours
Effect measured:	Mortality – no movement of body appendages on gentle prodding.
Test Acceptability:	≥ 90% survival of test organisms in control solution Yes X No _
Sampling Requirements:	Samples first used within 36 hours of collection Yes X No _
Sample Volume Required:	Minimum 2 liters
Test Organism Source:	New England Bioassay
Test Acceptability Criteria:	Mean Alternate Water Control Survival = 100% Mean Dilution Water Control Survival = 100%

Test Results:

	Limits	Results
48-hour LC50	N/A	>100%
Upper Value		±∞
Lower Value		100%
Data Analysis Method Used		Graphical
A-NOEC		100%

Reference Toxicant Data:

Date:	8/1/17
Toxicant:	Sodium Dodecyl Sulfate
Dilution Water:	NEB Artificial Salt Water
Toxicant Source:	New England Bioassay
Organism Source:	New England Bioassay
48-hour LC50:	17.7 mg/L
In Acceptable Range:	Yes X No _____

Dechlorination Procedures: Chlorine is measured using 4500 CL-G DPD Colorimetric Method.

X Dechlorination was not required.

_ Sample was dechlorinated by adding sodium thiosulfate to the sample prior to test initiation. Since dechlorination of the effluent was necessary, a thiosulfate control of diluent water spiked with sodium thiosulfate was also included in the test series. Chlorine was _____ mg/L in a dechlorinated sample.

_ Chlorine Measurement was elevated due to interference. Chlorine was _____ mg/L in a filtered sample.

X Total Residual Chlorine of the effluent was re-measured amperometrically, and was found to be <0.05 mg/L.

Additional Notes or Other Conditions Affecting the Test:

MENIDIA BERYLLINA AQUATIC TOXICITY TEST REPORT

Test Reference Manual:	EPA 821-R-02-012, "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater Organisms and Marine Organisms", Fifth Edition
Test Method:	*Menidia beryllina* Acute Toxicity Test – Method 2006.0
Test Type:	Acute Static Non-Renewal Saltwater Test
Salinity:	25 ppt ± 2 ppt by adding dry ocean salts (Instant Ocean)
Temperature :	25 ± 1°C
Light Quality:	Ambient Laboratory Illumination
Photoperiod:	16 hours light, 8 hours dark
Test Chamber Size:	250 mL
Test Solution Volume:	Minimum 200 mL/replicate
Age of Test Organisms:	11 days old (24 hour age range)
Number of Fish Per Test Chamber:	10
Number of Replicate Test Chambers Per Treatment:	4
Total Number of Organisms Per Test Concentration:	40
Feeding Regime:	Light feeding using concentrated *Artemia* nauplii while holding prior to initiating the test.
Aeration:	Aerated at <100 bubbles/minute
Dilution Water:	Chelsea River
Alternate Control Water:	NEB Artificial Salt Water (salinity 24 ppt)
Effluent Concentrations:	0%, 6.25%, 12.5%, 25%, 50% and 100% effluent
Test Duration:	48 hours
Effect measured:	Mortality – no movement on gentle prodding.
Test Acceptability:	≥ 90% survival of test organisms in control solution Yes X No _
Sampling Requirements:	Samples first used within 36 hours of collection Yes X No _
Sample Volume Required:	Minimum 2 liters
Test Organism Source:	Aquatic Biosystems

Test Acceptability Criteria: Mean Alternate Water Control Survival = 100%
Mean Dilution Water Control Survival = 100%

Test Results:	Limits	Results
48-hour LC50	N/A	>100%
Upper Value		±∞
Lower Value		100%
Data Analysis Method Used		Graphical
A-NOEC		100%

Reference Toxicant Data:	
Date:	8/16/17
Toxicant:	Sodium Dodecyl Sulfate
Dilution Water:	NEB Artificial Salt Water
Toxicant Source:	New England Bioassay
Organism Source:	Aquatic Indicators
48-hour LC50:	7.79 mg/L
In Acceptable Range:	Yes X No _____

Dechlorination Procedures: Chlorine is measured using 4500 CL-G DPD Colorimetric Method.

X Dechlorination was not required.

_ Sample was dechlorinated by adding sodium thiosulfate to the sample prior to test initiation. Since dechlorination of the effluent was necessary, a thiosulfate control of diluent water spiked with sodium thiosulfate was also included in the test series. Chlorine was _____ mg/L in a dechlorinated sample.

_ Chlorine Measurement was elevated due to interference. Chlorine was _____ mg/L in a filtered sample.

X Total Residual Chlorine of the effluent was re-measured amperometrically, and was found to be <0.05 mg/L.

Additional Notes or Other Conditions Affecting the Test:

NEW ENGLAND BIOASSAY ACUTE TOXICITY DATA FORM
COVER SHEET FOR LC50 TESTS

CLIENT: Eurofins Spectrum Analytical
ADDRESS: 11 Almgren Drive
Agawam, MA 01001
SAMPLE TYPE: Chelsea Sandwich Terminal Outfall 003
DILUTION WATER: Chelsea River

M.bahia TEST ID #: 17-1222a
M.beryllina TEST ID #: 17-1222b
COC #: C37-3149/50
PROJECT #: 05.0045458.00

Sample Date(s): 8/9/17
Received On: 8/10/17

INVERTEBRATES

TEST SET UP (TECH INIT): PD
TEST SPECIES: *Mysidopsis bahia*
NEB LOT#: Mb17(8-7)
AGE: 3 days
TEST SOLUTION VOLUME (mls): 200
NO. ORGANISMS PER TEST CHAMBER: 10
NO. ORGANISMS PER CONCENTRATION: 40
NO. ORGANISMS PER CONTROL: 40

	DATE	TIME
TEST START:	8/10/17	1435
TEST END:	8/12/17	1353

VERTEBRATES

TEST SET UP (TECH INIT): PD
TEST SPECIES: *Menidia beryllina*
NEB LOT#: Ss17AB(8-8)
AGE: 11 days
TEST SOLUTION VOLUME (mls): 700
NO. ORGANISMS PER TEST CHAMBER: 10
NO. ORGANISMS PER CONCENTRATION: 40
NO. ORGANISMS PER CONTROL: 40

	DATE	TIME
TEST START:	8/10/17	1450
TEST END:	8/12/17	1402

LABORATORY CONTROL WATER:

			Salinity (ppt)	Alkalinity (mg/L $CaCO_3$)
ARTIFICIAL SW:	NEB BATCH#	CRIO37-027	24	125

RESULTS OF *Mysidopsis bahia* LC50 TEST

METHOD	LC50 (%)	95% Confidence Limits
BINOMIAL/GRAPHICAL	>100%	100%±∞
PROBIT		
SPEARMAN KARBER		
NOAEL	100%	

RESULTS OF *Menidia beryllina* LC50 TEST

METHOD	LC50 (%)	95% Confidence Limits
BINOMIAL/GRAPHICAL	>100%	100%±∞
PROBIT		
SPEARMAN KARBER		
NOAEL	100%	

NOEC: NO OBSERVABLE EFFECT CONCENTRATION

Comments: River: 13.8L brought up to 16L with DI water to dilute to 25ppt salinity.
258.8g IO added to ~9L effluent to bring salinity up to 24ppt.

REVIEWD BY: [signature] DATE: 9/8/17

NEW ENGLAND BIOASSAY
Toxicity Test Data Sheet

NEB Test #: 17-1222a

Project #: 05.0045458.00

Facility Name: Chelsea Sandwich Terminal

Date Sampled: 8/9/17

Date Received 8/10/17

Sample ID: SC37956-01 & SC37957-01

Test Organism *Mysidopsis bahia*

Organism Age: 3 days

Test Duration: 48 (hours)

Beginning Date: 8/10/17 Time: 1435

Dilution Water Source: Chelsea River

Salinity: 25 ppt

Effluent Conc. %	Number of Surviving Organisms			Dissolved Oxygen (mg/L)			Temperature (°C)			pH (su)			Salinity (ppt)		
Initials	0	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP
	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control A	10	10	10	7.1	7.3	4.6	25.6	25.6	24.8	7.9	8.0	7.2	24	25	25
Control B	10	10	10		6.2	5.2		25.6	25.5		8.0	7.8		25	26
Control C	10	10	10		6.2	5.4		25.7	25.5		8.0	7.9		25	27
Control D	10	10	10		6.0	5.4		26.0	25.5		7.9	7.6		25	27
Diluent A	10	10	10	7.6	6.2	4.8	24.9	25.8	25.5	8.0	7.8	7.6	25	25	27
Diluent B	10	10	10		7.9	4.9		25.7	25.5		7.8	7.6		26	27
Diluent C	10	10	10		6.5	4.9		25.6	25.5		7.9	7.6		26	28
Diluent D	10	10	10		6.3	5.0		25.9	25.5		7.9	7.6		25	28
6.25 A	10	10	10	7.6	6.1	3.8	24.8	26.1	26.0	8.0	7.8	7.5	25	26	25
6.25 B	10	10	10		6.2	4.7		26.0	25.5		7.8	7.6		25	26
6.25 C	10	10	10		6.3	4.6		25.7	25.5		7.8	7.6		25	26
6.25 D	10	10	10		6.3	5.0		25.7	25.5		7.8	7.6		25	26
12.5 A	10	10	10	7.5	6.5	5.2	24.8	25.8	25.6	8.0	7.9	7.7	25	25	26
12.5 B	10	10	10		6.5	5.2		25.7	25.6		7.9	7.6		25	26
12.5 C	10	10	10		6.5	3.6		25.6	25.7		7.9	7.5		25	25
12.5 D	10	10	10		6.5	5.3		25.7	25.8		7.9	7.7		25	27
25 A	10	10	10	7.5	7.3	5.3	24.9	25.5	25.6	8.0	7.9	7.8	25	25	26
25 B	10	10	10		6.3	5.2		25.5	25.5		7.8	7.7		25	26
25 C	10	10	10		6.2	5.6		25.6	25.5		7.9	7.8		25	26
25 D	10	10	10		6.3	5.6		25.6	25.4		7.9	7.8		25	28

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

NEW ENGLAND BIOASSAY
Toxicity Test Data Sheet

NEB Test #: 17-1222a

Project #: 05.0045458.00

Facility Name: Chelsea Sandwich Terminal

Date Sampled: 8/9/17

Date Received 8/10/17

Sample ID: SC37956-01 & SC37957-01

Test Organism *Mysidopsis bahia*

Organism Age 3 days

Test Duration: 48 (hours)

Beginning Date: 8/10/17 Time: 1435

Dilution Water Source Chelsea River

Salinity: 25 ppt

Effluent Conc. %	Number of Surviving Organisms			Dissolved Oxygen (mg/L)			Temperature (°C)			pH (su)			Salinity (ppt)		
Initials	0	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP
	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
50 A	10	10	10	7.4	6.3	5.6	25.0	25.7	25.5	7.9	7.9	7.8	24	24	25
50 B	10	10	10		6.2	5.5		25.8	25.5		7.9	7.9		24	25
50 C	10	10	10		6.2	5.6		25.7	25.5		7.9	7.9		24	25
50 D	10	10	10		6.2	5.6		25.7	25.4		7.9	7.9		24	27
100 A	10	10	10	7.1	6.2	5.4	25.1	25.7	25.3	7.9	8.0	8.0	23	24	25
100 B	10	10	10		6.3	5.2		25.7	25.6		8.0	8.0		24	24
100 C	10	10	10		6.2	4.9		25.7	25.6		8.0	8.0		24	24
100 D	10	10	10		6.2	5.1		25.7	25.6		8.0	8.1		24	25

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

Mysidopsis 96-h Acute Survival Test

New England Bioassay

Analysis ID:	20-9982-1251	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	06 Sep-17 14:04	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	01-7733-2649	**Test Type:**	Survival (48h)	**Analyst:**	
Start Date:	10 Aug-17	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	
Ending Date:	12 Aug-17	**Species:**	Mysidopsis bahia	**Brine:**	
Duration:	48h	**Source:**	In-House Culture	**Age:**	3
Sample ID:	03-7914-9439	**Code:**	16995C7F	**Client:**	Spectrum Analytical
Sample Date:	09 Aug-17	**Material:**	POTW Effluent	**Project:**	
Receipt Date:	10 Aug-17	**Source:**	Chelsea Sandwich Terminal (MA0003280)		
Sample Age:	24h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	1430300	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

48h Survival Rate Summary

Calculated Variate(A/B)

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	D	4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
6.25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
12.5		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
50		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
100		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

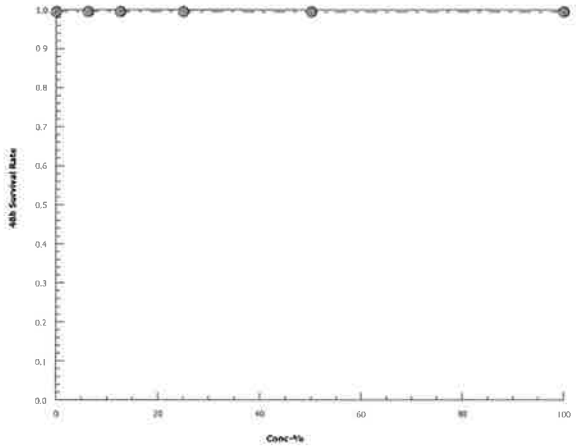
48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Mysidopsis 96-h Acute Survival Test **New England Bioassay**

Analysis ID:	20-9982-1251	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	06 Sep-17 14:04	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Mysidopsis 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	04-1666-0962	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	06 Sep-17 14:05	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	01-7733-2649	**Test Type:**	Survival (48h)	**Analyst:**	
Start Date:	10 Aug-17	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	
Ending Date:	12 Aug-17	**Species:**	Mysidopsis bahia	**Brine:**	
Duration:	48h	**Source:**	In-House Culture	**Age:**	3
Sample ID:	03-7914-9439	**Code:**	16995C7F	**Client:**	Spectrum Analytical
Sample Date:	09 Aug-17	**Material:**	POTW Effluent	**Project:**	
Receipt Date:	10 Aug-17	**Source:**	Chelsea Sandwich Terminal (MA0003280)		
Sample Age:	24h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU
Angular (Corrected)	C > T	100	> 100	n/a	1

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.25	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		12.5	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		25	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		50	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		100	18	10	1	6	Asymp	0.8333	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0	0	5	65540	<1.0E-37	Significant Effect
Error	0	0	18			
Total	0		23			

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
6.25		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
12.5		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
25		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
50		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
100		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	1.0000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

Mysidopsis 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	04-1666-0962	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	06 Sep-17 14:05	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

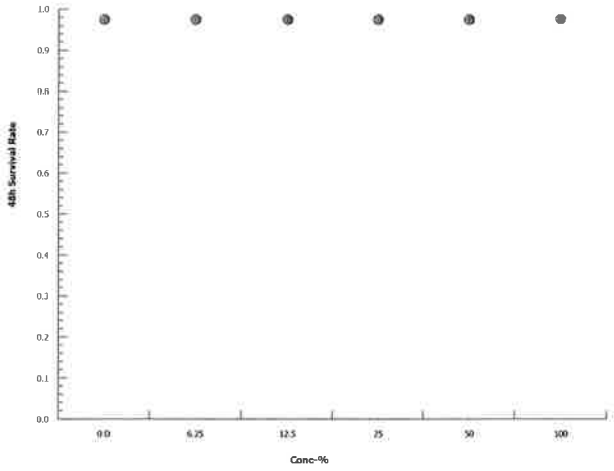
Angular (Corrected) Transformed Detail

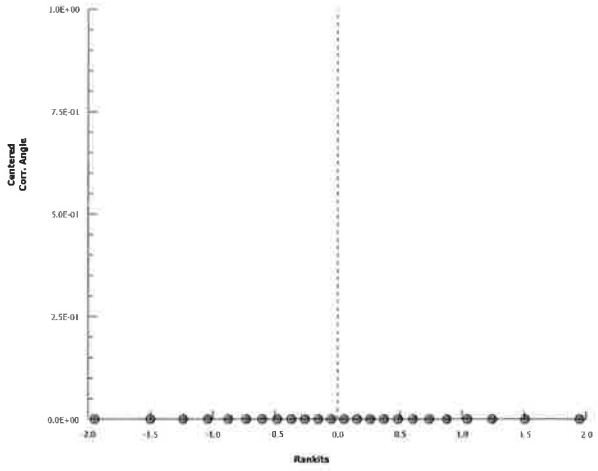
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.412	1.412	1.412	1.412
6.25		1.412	1.412	1.412	1.412
12.5		1.412	1.412	1.412	1.412
25		1.412	1.412	1.412	1.412
50		1.412	1.412	1.412	1.412
100		1.412	1.412	1.412	1.412

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	10/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Graphics





NEW ENGLAND BIOASSAY
Toxicity Test Data Sheet

NEB Test #: 17-1222b

Project #: 05.0045458.00

Facility Name: Chelsea Sandwich Terminal

Date Sampled: 8/9/17

Date Received 8/10/17

Sample ID: SC37956-01 & SC37957-01

Test Organism *Menidia beryllina*

Organism Age: 11 days

Test Duration: 48 (hours)

Beginning Date 8/10/17 Time: 1450

Dilution Water Source: Chelsea River

Salinity: 25 ppt

Effluent Conc. %	Number of Surviving Organisms			Dissolved Oxygen (mg/L)			Temperature (°C)			pH (su)			Salinity (ppt)		
Initials	0	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP
	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
Control A	10	10	10	7.1	7.2	6.8	25.6	25.2	25.3	7.9	7.9	7.9	24	25	25
Control B	10	10	10		6.3	6.3		25.5	25.5		7.9	8.0		25	25
Control C	10	10	10		6.2	6.3		25.5	25.5		7.9	8.0		25	25
Control D	10	10	10		6.4	6.3		25.6	25.5		7.8	8.0		25	25
Diluent A	10	10	10	7.6	6.2	5.9	24.9	25.8	25.6	8.0	7.8	7.8	25	25	25
Diluent B	10	10	10		5.9	5.9		25.8	25.8		7.8	7.8		25	25
Diluent C	10	10	10		6.0	6.2		25.8	25.7		7.8	7.8		25	25
Diluent D	10	10	10		7.1	5.8		25.6	25.7		7.8	7.8		25	25
6.25 A	10	10	10	7.6	6.8	6.5	24.8	25.6	25.6	8.0	7.8	7.9	25	25	25
6.25 B	10	10	10		6.2	6.3		25.7	25.7		7.8	7.9		25	25
6.25 C	10	10	10		6.2	6.3		25.8	25.5		7.8	7.9		25	25
6.25 D	10	10	10		6.1	6.4		25.9	25.5		7.8	7.9		25	25
12.5 A	10	10	10	7.5	7.0	6.2	24.8	25.5	25.7	8.0	7.8	7.9	25	25	25
12.5 B	10	10	10		6.4	6.3		25.7	25.6		7.8	7.9		25	25
12.5 C	10	10	10		6.2	6.3		25.8	25.5		7.8	7.9		25	25
12.5 D	10	10	10		6.0	6.4		25.8	25.5		7.8	7.9		25	25
25 A	10	10	10	7.5	6.3	6.1	24.9	25.8	25.7	8.0	7.8	7.9	25	25	25
25 B	10	10	10		6.0	6.1		25.8	25.7		7.9	7.9		25	25
25 C	10	10	10		6.0	6.1		25.8	25.7		7.9	7.9		25	25
25 D	10	10	9		6.1	6.2		25.9	25.7		7.9	7.9		25	25

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

NEW ENGLAND BIOASSAY
Toxicity Test Data Sheet

NEB Test #: 17-1222b

Project #: 05.0045458.00

Facility Name: Chelsea Sandwich Terminal

Date Sampled: 8/9/17

Date Received 8/10/17

Sample ID: SC37956-01 & SC37957-01

Test Organism *Menidia beryllina*

Organism Age 11 days

Test Duration: 48 (hours)

Beginning Date 8/10/17 Time: 1450

Dilution Water Source Chelsea River

Salinity: 25 ppt

Effluent Conc. %	Number of Surviving Organisms			Dissolved Oxygen (mg/L)			Temperature (°C)			pH (su)			Salinity (ppt)		
Initials	0	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP	PD	ZM	TBP
	0	24	48	0	24	48	0	24	48	0	24	48	0	24	48
50 A	10	10	10	7.4	6.2	6.4	25.0	25.7	25.5	7.9	7.9	8.0	24	24	25
50 B	10	10	10		6.2	6.4		25.8	25.6		7.9	8.0		24	24
50 C	10	10	10		5.9	6.3		25.7	25.6		7.9	8.0		24	24
50 D	10	10	10		6.0	6.3		25.7	25.5		7.9	8.0		24	24
100 A	10	10	10	7.1	6.4	6.5	25.1	25.5	25.4	7.9	7.9	8.1	23	23	24
100 B	10	10	10		6.2	6.5		25.5	25.4		8.0	8.1		23	24
100 C	10	10	10		6.1	6.4		25.6	25.4		8.0	8.1		23	24
100 D	10	10	10		6.0	6.4		25.6	25.5		8.0	8.1		24	24

LC50	Confidence Interval	A-NOEC	Computational Method
>100%	100%±∞	100%	Graphical

Inland Silverside 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	01-4281-8375	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	06 Sep-17 14:06	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes
Batch ID:	01-7733-2649	**Test Type:**	Survival (48h)	**Analyst:**	
Start Date:	10 Aug-17	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	
Ending Date:	12 Aug-17	**Species:**	Menidia beryllina	**Brine:**	
Duration:	48h	**Source:**	In-House Culture	**Age:**	12
Sample ID:	03-7914-9439	**Code:**	16995C7F	**Client:**	Spectrum Analytical
Sample Date:	09 Aug-17	**Material:**	POTW Effluent	**Project:**	
Receipt Date:	10 Aug-17	**Source:**	Chelsea Sandwich Terminal (MA0003280)		
Sample Age:	24h	**Station:**			

Linear Interpolation Options

X Transform	Y Transform	Seed	Resamples	Exp 95% CL	Method
Log(X)	Linear	804317	200	Yes	Two-Point Interpolation

Point Estimates

Level	%	95% LCL	95% UCL	TU	95% LCL	95% UCL
LC50	>100	n/a	n/a	<1	n/a	n/a

48h Survival Rate Summary — Calculated Variate(A/B)

Conc-%	Code	Count	Mean	Min	Max	Std Err	Std Dev	CV%	%Effect	A	B
0	D	4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
6.25		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
12.5		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
25		4	0.9750	0.9000	1.0000	0.0250	0.0500	5.13%	2.5%	39	40
50		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40
100		4	1.0000	1.0000	1.0000	0.0000	0.0000	0.00%	0.0%	40	40

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	0.9000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

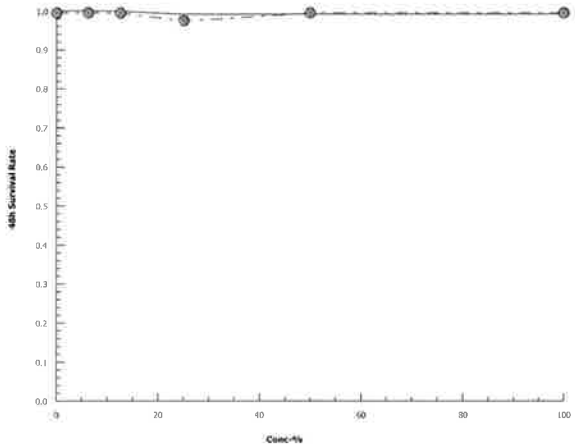
48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	9/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Inland Silverside 96-h Acute Survival Test **New England Bioassay**

Analysis ID:	01-4281-8375	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	06 Sep-17 14:06	**Analysis:**	Linear Interpolation (ICPIN)	**Official Results:**	Yes

Graphics



Inland Silverside 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	18-4948-9563	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	06 Sep-17 14:06	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes
Batch ID:	01-7733-2649	**Test Type:**	Survival (48h)	**Analyst:**	
Start Date:	10 Aug-17	**Protocol:**	EPA/821/R-02-012 (2002)	**Diluent:**	
Ending Date:	12 Aug-17	**Species:**	Menidia beryllina	**Brine:**	
Duration:	48h	**Source:**	In-House Culture	**Age:**	12
Sample ID:	03-7914-9439	**Code:**	16995C7F	**Client:**	Spectrum Analytical
Sample Date:	09 Aug-17	**Material:**	POTW Effluent	**Project:**	
Receipt Date:	10 Aug-17	**Source:**	Chelsea Sandwich Terminal (MA0003280)		
Sample Age:	24h	**Station:**			

Data Transform	Alt Hyp	NOEL	LOEL	TOEL	TU	PMSD
Angular (Corrected)	C > T	100	> 100	n/a	1	4.57%

Steel Many-One Rank Sum Test

Control	vs	Conc-%	Test Stat	Critical	Ties	DF	P-Type	P-Value	Decision(α:5%)
Dilution Water		6.25	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		12.5	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		25	16	10	1	6	Asymp	0.6105	Non-Significant Effect
		50	18	10	1	6	Asymp	0.8333	Non-Significant Effect
		100	18	10	1	6	Asymp	0.8333	Non-Significant Effect

ANOVA Table

Source	Sum Squares	Mean Square	DF	F Stat	P-Value	Decision(α:5%)
Between	0.0055332	0.0011066	5	1	0.4457	Non-Significant Effect
Error	0.0199195	0.0011066	18			
Total	0.0254527		23			

Distributional Tests

Attribute	Test	Test Stat	Critical	P-Value	Decision(α:1%)
Variances	Levene Equality of Variance Test	9	4.248	2.0E-04	Unequal Variances
Variances	Mod Levene Equality of Variance Test	1	4.248	0.4457	Equal Variances
Distribution	Shapiro-Wilk W Normality Test	0.4634	0.884	2.5E-08	Non-Normal Distribution

48h Survival Rate Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
6.25		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
12.5		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
25		4	0.9750	0.8954	1.0000	1.0000	0.9000	1.0000	0.0250	5.13%	2.50%
50		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%
100		4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	0.00%	0.00%

Angular (Corrected) Transformed Summary

Conc-%	Code	Count	Mean	95% LCL	95% UCL	Median	Min	Max	Std Err	CV%	%Effect
0	D	4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
6.25		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
12.5		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
25		4	1.371	1.242	1.501	1.412	1.249	1.412	0.04074	5.94%	2.89%
50		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%
100		4	1.412	1.412	1.412	1.412	1.412	1.412	0	0.00%	0.00%

Inland Silverside 96-h Acute Survival Test — **New England Bioassay**

Analysis ID:	18-4948-9563	**Endpoint:**	48h Survival Rate	**CETIS Version:**	CETISv1.9.2
Analyzed:	06 Sep-17 14:06	**Analysis:**	Nonparametric-Control vs Treatments	**Official Results:**	Yes

48h Survival Rate Detail

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.0000	1.0000	1.0000	1.0000
6.25		1.0000	1.0000	1.0000	1.0000
12.5		1.0000	1.0000	1.0000	1.0000
25		1.0000	0.9000	1.0000	1.0000
50		1.0000	1.0000	1.0000	1.0000
100		1.0000	1.0000	1.0000	1.0000

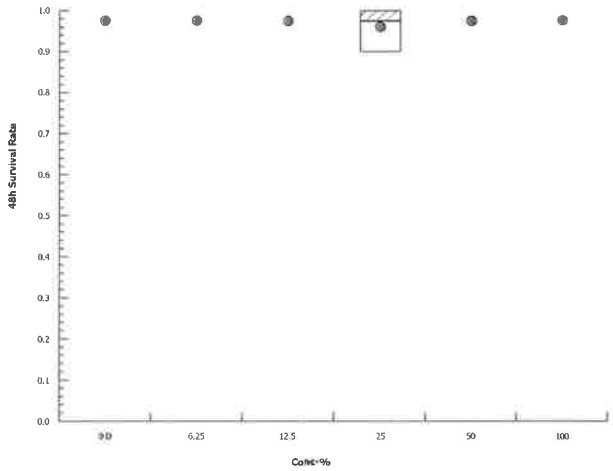
Angular (Corrected) Transformed Detail

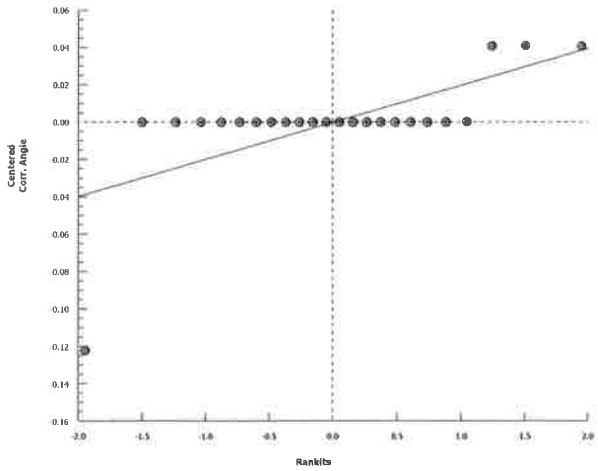
Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	1.412	1.412	1.412	1.412
6.25		1.412	1.412	1.412	1.412
12.5		1.412	1.412	1.412	1.412
25		1.412	1.249	1.412	1.412
50		1.412	1.412	1.412	1.412
100		1.412	1.412	1.412	1.412

48h Survival Rate Binomials

Conc-%	Code	Rep 1	Rep 2	Rep 3	Rep 4
0	D	10/10	10/10	10/10	10/10
6.25		10/10	10/10	10/10	10/10
12.5		10/10	10/10	10/10	10/10
25		10/10	9/10	10/10	10/10
50		10/10	10/10	10/10	10/10
100		10/10	10/10	10/10	10/10

Graphics





INITIAL CHEMISTRY INFORMATION

CLIENT: Chelsea Sandwich Terminal

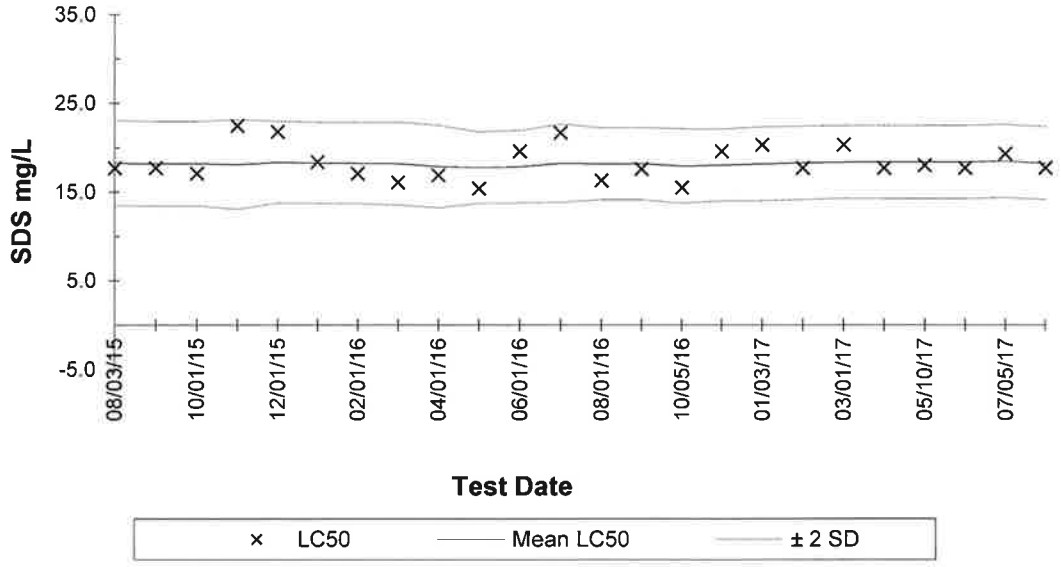
PROJECT # 05.0045458.00

RECIEPT DATE	8/10/17	
SAMPLE	Effluent	Receiving Water
COC #	C37-3149	C37-3150
Temperature (°C)	1.8	1.9
Dissolved Oxygen (mg/L)	6.3	11.0
pH (standard units)	6.8	7.8
Conductivity (µmhos/cm)	380	44,930
Salinity (ppt)	<1	29
Hardness (as mg/L CaCO3)	72	5100
Alkalinity (as mg/L CaCO3)	50	100
TRC - DPD (mg/L)	0.066	0.016
INITIALS	CB	CB

Additional notes:

New England Bioassay
Reference Toxicant Data: *Mysidopsis bahia* 48-hour LC50

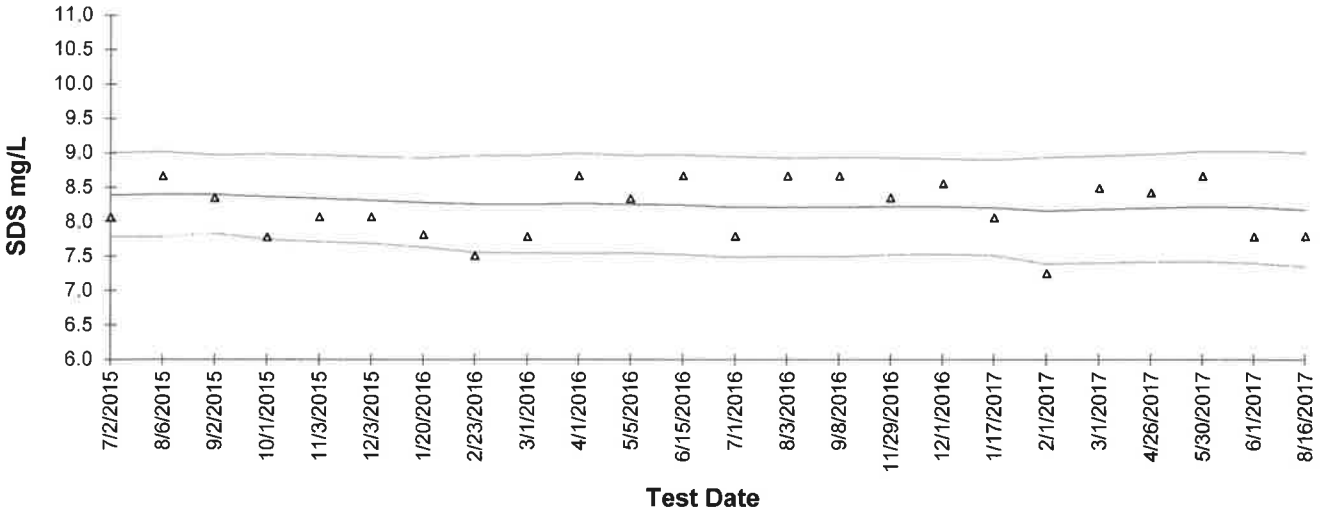
Reference Toxicant: Sodium Dodecyl Sulfate
Test Dates: Aug 2015 - Aug 2017



Test ID	Date	LC_{50}	Mean LC_{50}	STD	-2STD	+2STD	CV	CV National 75th & 90th%
15-1082	8/3/2015	17.7	18.3	2.4	13.5	23.1	0.13	0.26
15-1296	9/1/2015	17.7	18.2	2.4	13.4	23.0	0.13	0.26
15-1458	10/1/2015	17.1	18.2	2.4	13.5	23.0	0.13	0.26
15-1687	11/2/2015	22.5	18.1	2.5	13.1	23.2	0.14	0.26
15-1776	12/1/2015	21.8	18.4	2.3	13.8	23.0	0.13	0.26
16-34	1/4/2016	18.4	18.3	2.3	13.7	22.9	0.12	0.26
16-142	2/1/2016	17.1	18.3	2.3	13.7	22.8	0.12	0.26
16-338	3/8/2016	16.1	18.2	2.3	13.6	22.9	0.13	0.26
16-460	4/1/2016	16.9	17.9	2.3	13.2	22.5	0.13	0.26
16-600	5/2/2016	15.4	17.8	2.0	13.7	21.8	0.11	0.26
16-709	6/1/2016	19.6	17.9	2.0	13.8	22.0	0.11	0.26
16-849	7/1/2016	21.7	18.3	2.2	13.8	22.7	0.12	0.26
16-1058	8/1/2016	16.3	18.2	2.0	14.1	22.2	0.11	0.26
16-1256	9/7/2016	17.6	18.2	2.0	14.1	22.3	0.11	0.26
16-1471	10/5/2016	15.5	17.9	2.1	13.7	22.1	0.12	0.26
16-1590	11/1/2016	19.6	18.0	2.0	14.0	22.1	0.11	0.26
17-9	1/3/2017	20.3	18.2	2.1	14.0	22.4	0.11	0.26
17-154	2/1/2017	17.7	18.3	2.1	14.1	22.4	0.11	0.26
17-273	3/1/2017	20.3	18.4	2.1	14.3	22.5	0.11	0.26
17-479	4/4/2017	17.7	18.4	2.1	14.2	22.5	0.11	0.26
17-697	5/10/2017	18.0	18.4	2.1	14.2	22.5	0.11	0.26
17-776	6/1/2017	17.7	18.4	2.1	14.2	22.5	0.11	0.26
17-977	7/5/2017	19.3	18.5	2.1	14.3	22.6	0.11	0.26
17-1144	8/1/2017	17.7	18.2	2.0	14.1	22.3	0.11	0.26

New England Bioassay
Reference Toxicant Data: *Menidia beryllina* 48-hour LC50

Reference Toxicant: Sodium Dodecyl Sulfate
Test Dates: July 2015 - Aug 2017



Test ID	Date	LC_{50}	Mean LC_{50}	STD	-2STD	+2STD	CV	CV National 75th%	CV National 90th%
15-901	7/2/2015	8.1	8.4	0.3	7.8	9.0	0.04	0.21	0.44
15-1083	8/6/2015	8.7	8.4	0.3	7.8	9.0	0.04	0.21	0.44
15-1297	9/2/2015	8.4	8.4	0.3	7.8	9.0	0.03	0.21	0.44
15-1539	10/1/2015	7.8	8.4	0.3	7.7	9.0	0.04	0.21	0.44
15-1688	11/3/2015	8.1	8.3	0.3	7.7	9.0	0.04	0.21	0.44
15-1825	12/3/2015	8.1	8.3	0.3	7.7	8.9	0.04	0.21	0.44
16-108	1/20/2016	7.8	8.3	0.3	7.6	8.9	0.04	0.21	0.44
16-260	2/23/2016	7.5	8.3	0.4	7.6	9.0	0.04	0.21	0.44
16-303	3/1/2016	7.8	8.3	0.4	7.5	9.0	0.04	0.21	0.44
16-461	4/1/2016	8.7	8.3	0.4	7.5	9.0	0.04	0.21	0.44
16-602	5/5/2016	8.3	8.3	0.4	7.5	9.0	0.04	0.21	0.44
16-798	6/15/2016	8.7	8.2	0.4	7.5	9.0	0.04	0.21	0.44
16-850	7/1/2016	7.8	8.2	0.4	7.5	8.9	0.04	0.21	0.44
16-1060	8/3/2016	8.7	8.2	0.4	7.5	8.9	0.04	0.21	0.44
16-1282	9/8/2016	8.7	8.2	0.4	7.5	8.9	0.04	0.21	0.44
16-1705	11/29/2016	8.4	8.2	0.4	7.5	8.9	0.04	0.21	0.44
16-1739	12/1/2016	8.6	8.2	0.3	7.5	8.9	0.04	0.21	0.44
17-83	1/17/2017	8.1	8.2	0.3	7.5	8.9	0.04	0.21	0.44
17-155	2/1/2017	7.3	8.2	0.4	7.4	8.9	0.05	0.21	0.44
17-278	3/1/2017	8.5	8.2	0.4	7.4	9.0	0.05	0.21	0.44
17-595	4/26/2017	8.4	8.2	0.4	7.4	9.0	0.05	0.21	0.44
17-758	5/30/2017	8.7	8.2	0.4	7.4	9.0	0.05	0.21	0.44
17-777	6/1/2017	7.8	8.2	0.4	7.4	9.0	0.05	0.21	0.44
17-1246	8/16/2017	7.8	8.2	0.4	7.3	9.0	0.05	0.21	0.44

1222

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SUBCONTRACT ORDER

SC37956

SENDING LABORATORY:

Eurofins Spectrum Analytical, Inc.
11 Almgren Drive
Agawam, MA 01001
Phone: (413) 789-9018
Fax: (413) 789-4076
Project Manager: Dulce Litchfield

RECEIVING LABORATORY:

GZA Geoenvironmental, Inc. - Manchester, CT*
77 Batson Drive
Manchester, CT 06042
Phone: (860) 286-8900
Fax: (860) 242-8389

BILL TO:

Eurofins Spectrum Analytical, Inc.
2425 New Holland Pike
Lancaster, PA 17601
Attention: Accounts Payable
accountspayable@eurofinsus.com
PO Number: SC37956

Project: Gulf Terminal - Chelsea, MA

Project #: Gulf Chelsea

PO Number: SC37956

Laboratory ID	Sample ID	Sampled	Matrix	Analysis	Due	Comments
	SC37956-01	09-Aug-17 08:30	Surface Water	Aquatic Tox	**24-Aug-17 16:00**	Client ID is Chelsea Creek/LC50

Containers Supplied:
Other (K)

C37-3150

Please send notice within 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration. Notice should be emailed to SpectrumLabResults@EurofinsUS.com.

Please notify SpectrumLabResults@EurofinsUS.com immediately and prior to conducting analysis if certification is not held for the analyses requested.

Please e-mail results in electronic format to SpectrumLabResults@EurofinsUS.com.

Received ON ICE

Released By	Date	Received By	Date	Temp °C
	8-10-17		8/10/17	1015
Released By	Date	Received By	Date	

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SUBCONTRACT ORDER

SC37957

SENDING LABORATORY:

Eurofins Spectrum Analytical, Inc.
11 Almgren Drive
Agawam, MA 01001
Phone: (413) 789-9018
Fax: (413) 789-4076
Project Manager: Dulce Litchfield

RECEIVING LABORATORY:

GZA Geoenvironmental, Inc. - Manchester, CT*
77 Batson Drive
Manchester, CT 06042
Phone: (860) 286-8900
Fax: (860) 242-8389

BILL TO:

Eurofins Spectrum Analytical, Inc.
2425 New Holland Pike
Lancaster, PA 17601
Attention: Accounts Payable
accountspayable@eurofinsus.com
PO Number: SC37957

Project: Gulf Terminal - Chelsea, MA

Project #: Gulf Chelsea

PO Number: SC37957

Laboratory ID	Sample ID	Sampled	Matrix	Analysis	Due	Comments
	SC37957-01	09-Aug-17 09:00	Surface Water	Aquatic Tox	**24-Aug-17 16:00**	Client ID is Outfall 003/LC50

Containers Supplied:
Other (L)

C37-3149

Please send notice within 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration. Notice should be emailed to SpectrumLabResults@EurofinsUS.com.

Please notify SpectrumLabResults@EurofinsUS.com immediately and prior to conducting analysis if certification is not held for the analyses requested.

Please e-mail results in electronic format to SpectrumLabResults@EurofinsUS.com.

Received ON ICE

Released By	Date	Received By	Date	Temp °C
	8-10-17		8/10/17	1015
Released By	Date	Received By	Date	

NEB SALTWATER SPE(.S ACCLIMATION RECORD

Species: Menidia beryllina	Client: Test ID:	Quantity: 300	*Mortality upon arrival 0
Source: Aquatic Biosystems	Lot #: SS17AB(8.8)	Age: 9 days on 8.8.17	* Mortality > 10% - Notify management

Allowable Mortality: > 5% mortality = Notify management

Allowable Acclimation: Fish = No more than 50% tank volume water change over a 12 (twelve) hour period.

Mysids = Need to be +/- 2 ppt of test dilution water.

Water Chemistry						Observations					
Date	D.O. (mg/L)	p.H. (SU)	Temp. (C) *	Alkal. (mg/L) ml titrant	Sal. (ppt) **	Feedings AM	Feedings NOON	Feedings PM	Behavioral observations A = Normal, B = Erratic mov. C = Dead	Do organisms look stressed? Yes / No	Mortalities # of dead organisms removed from tank	Comments / Treatment type
8.8.17	9.2	7.6	23.4	100 / 20ml	26	AH	SJP	AH	A	No	0	Acclimated to ASW
8.9.17	7.3	—	23.3	—	25	SJP	MG	MG	A	No	0	H_2O Δ w/ 6L ASW
8-10-17	7.2	—	23.7	—	26	SJP	SJP	SJP	A	No	0	H_2O Δ w/ 6L ASW

30 of 30

SL37956 ✓ BY

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered **1**=Na_2S2O_3 **2**=HCl **3**=H_2SO_4 **4**=HNO_3 **5**=NaOH **6**=Ascorbic Acid
7=CH3OH **8**=$NaHSO_4$ **9**=Deionized Water **10**=H_3PO_4 **11**= none **12**= _____

DW=Dinking Water **GW**=Groundwater **SW**=Surface Water **WW**=Waste Water
O=Oil **SO**=Soil **SL**=Sludge **A**=Indoor/Ambient Air **SG**=Soil Gas
X1= _____ **X2**= _____ **X3**= _____

G= Grab **C**=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Analysis: Ammonia	TSS	TRC, salinity, pH, TS	BTEX & naphthalene	PAHs	TOC	Total Recov. (Cd, Cu, Pb, Ni, Zn)*	LC50	Check if chlorinated
						List Preservative Code below:					3	11	11	2	11	10	4	11	
SL37956-1	Chelsea Creek	8/9/17	8:30	G	SW				1		X								☐
	Chelsea Creek			G	SW				1			X							☐
	Chelsea Creek			G	SW				1				X						☐
	Chelsea Creek			G	SW	3								X					☐
	Chelsea Creek			G	SW		1								X				☐
	Chelsea Creek			G	SW	2										X			☐
	Chelsea Creek			G	SW				1								X		☐
	Chelsea Creek			G	SW				1									X	☐
																			☐
																			☐

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☑ Standard ☐ No QC ☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other: _____
State-specific reporting standards

- *** Report metals down to the MDL**
- **Required Minimum Levels:**
- **BTEX - 2 µg/L**
- **naphthalene - 5 µg/L**
- **Group 1 PAHs - 0.1 µg/L**
- **Group 2 PAHs - 5 µg/L**
- **Cd, Pb, Ni - 0.2 ug/L**
- **Cu - 0.5 µg/L**
- **Zn - 5 µg/L**

Coll. date and Time added per client request. Dm 8/9

Relinquished by:	Received by:	Date:	Time:
0940		8-9-17	0940
		8/9/17	1207
		8/9/17	1610

Temp °C: Observed 3.6; Correction Factor 0; Corrected 3.6; IR ID # C1

☐ EDD format: _____
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☑ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

SC37957 1 Bm

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered **1**=Na_2S2O_3 **2**=HCl **3**=H_2SO_4 **4**=HNO_3 **5**=NaOH **6**=Ascorbic Acid
7=CH3OH **8**=$NaHSO_4$ **9**=Deionized Water **10**=H_3PO_4 **11**= none **12**= _____

DW=Dinking Water **GW**=Groundwater **SW**=Surface Water **WW**=Waste Water
O=Oil **SO**=Soil **SL**=Sludge **A**=Indoor/Ambient Air **SG**=Soil Gas
X1= _____ **X2**= _____ **X3**= _____

G= Grab **C**=Composite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Ammonia	TSS	O&G	BTEX, naphtha-lene, TBA	Vinyl chloride, MTBE + Ethanol	PAHs and total phenol*	Fecal Coliform	TOC	Check if chlorinated
						Containers					**Analysis**								
						List Preservative Code below:					3	11	3	2	2	11	11	10	
SC37957-01	Outfall 003	8/9	9:00	G	SW				1		X								☐
	Outfall 003			G	SW				1			X							☐
	Outfall 003			G	SW		1						X						☐
	Outfall 003			G	SW	3								X	X				☐
	Outfall 003			G	SW		1									X			☐
	Outfall 003			G	SW				1								X		☐
	Outfall 003			G	SW	2												X	☐
																			☐
																			☐
																			☐

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☑ Standard ☐ No QC ☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other: _____
State-specific reporting standards

* Report phenol down to MDL
Required Minimum Levels:
BTEX - 2 µg/L; TBA - 10 µg/L;
naphthalene and vinyl chl - 5 µg/L
ethanol - 400 µg/L
Group 1 PAHs - 0.1 µg/L
Group 2 PAHs - 5 µg/L

Relinquished by:	Received by:	Date:	Time:	Temp °C
		8-9-17	0940	Observed 3.6
		8-9-17	1207	Correction Factor 0
		8/9/17	1605	Corrected 3.6
				IR ID # a

☐ EDD format: _____
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☒ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

SC37957 Bay

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 2 of 2

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered 1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= none 12= _____

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Analysis: TRC, salinity, pH, TS	Total Recov. (Cd, Cr, Cu, Pb, Ni, Zn)*	LC50 **	Check if chlorinated
SC37957-01	Outfall 003	8/9	9:00	G	SW				1	X			☐
↓	Outfall 003	↓	↓	G	SW				1		X		☐
↓	Outfall 003	↓	↓	G	SW				1			X	☐
													☐
													☐
													☐
													☐
													☐
													☐
													☐

List Preservative Code below: 11 | 11

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☑ Standard ☐ No QC ☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other: _____
State-specific reporting standards:

* Report metals down to MDL
**LC50 sub to GZA

Required Minimum Levels:
Cd, Pb, Ni - 0.2 ug/L
Cu - 0.5 µg/L
Cr - 1 µg/L
Zn - 5 µg/L

Relinquished by:	Received by:	Date:	Time:	Temp °C
		8-9-17	0940	Observed 3.6
		8-9-17	1207	Correction Factor 0
		8/9/17		Corrected 3.6
				IR ID # 4

☐ EDD format: _____
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☑ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

SC37956 ✓ BM

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered 1=Na_2S2O_3 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH3OH 8=$NaHSO_4$ 9=Deionized Water 10=H_3PO_4 11= none 12= _____

DW=Dinking Water GW=Groundwater SW=Surface Water WW=Waste Water
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas
X1= _____ X2= _____ X3= _____

G= Grab C=Compsite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Analysis: Ammonia	TSS	TRC, salinity, pH, TS	BTEX & naphthalene	PAHs	TOC	Total Recov. (Cd, Cu, Pb, Ni, Zn)*	LC50	Check if chlorinated
						List Preservative Code below:					3	11	11	2	11	10	4	11	
SC37956-1	Chelsea Creek	8/9/17	8:30	G	SW				1		X								☐
	Chelsea Creek			G	SW				1			X							☐
	Chelsea Creek			G	SW				1				X						☐
	Chelsea Creek			G	SW	3								X					☐
	Chelsea Creek			G	SW		1								X				☐
	Chelsea Creek			G	SW	2										X			☐
	Chelsea Creek			G	SW				1								X		☐
	Chelsea Creek			G	SW				1									X	☐
																			☐
																			☐

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
☑ Standard ☐ No QC ☐ DQA*
☐ ASP A* ☐ ASP B*
☐ NJ Reduced* ☐ NJ Full*
☐ Tier II* ☐ Tier IV*
☐ Other: _____
State-specific reporting standards:

- * Report metals down to the MDL
- Required Minimum Levels:
- BTEX - 2 µg/L
- naphthalene - 5 µg/L
- Group 1 PAHs - 0.1 µg/L
- Group 2 PAHs - 5 µg/L
- Cd, Pb, Ni - 0.2 ug/L
- Cu - 0.5 µg/L
- Zn - 5 µg/L

Coll. date and Time added per client request BM 8/9

Relinquished by:	Received by:	Date:	Time:
0940		8-9-17	0940
		8/9/17	1207
		8/9/17	1610

Temp °C: Observed 3.6; Correction Factor 0; Corrected 3.6; IR ID # C1

☐ EDD format: _____
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☑ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

SC37957 1 Bm

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 2

Special Handling:
- ☑ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____

All TATs subject to laboratory approval
Min. 24-hr notification needed for rushes
Samples disposed after 60 days unless otherwise instructed.

Report To: Andrew Adams
Gulf Oil LP
281 Eastern Ave
Chelsea, MA 02150
Telephone #: 617.884.5980
Project Mgr: Andrew Adams

Invoice To: Christopher Gill
Gulf Oil LP
80 William St, Suite 400
Wellesley, MA 02481-3705
P.O No.: _____ Quote/RQN: _____

Project No: Gulf Chelsea
Site Name: Gulf Chelsea Terminal
Location: 281 Eastern Ave, Chelsea State: MA
Sampler(s): _____

F=Field Filtered **1**=Na_2S2O_3 **2**=HCl **3**=H_2SO_4 **4**=HNO_3 **5**=NaOH **6**=Ascorbic Acid
7=CH3OH **8**=$NaHSO_4$ **9**=Deionized Water **10**=H_3PO_4 **11**= none **12**= _____

DW=Dinking Water **GW**=Groundwater **SW**=Surface Water **WW**=Waste Water
O=Oil **SO**=Soil **SL**=Sludge **A**=Indoor/Ambient Air **SG**=Soil Gas
X1= _____ **X2**= _____ **X3**= _____

G= Grab **C**=Composite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers: # of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Analysis: Ammonia	TSS	O&G	BTEX, naphtha-lene, TBA	Vinyl chloride, MTBE + Ethanol	PAHs and total phenol*	Fecal Coliform	TOC	Check if chlorinated
SC37957-01	Outfall 003	8/9	9:00	G	SW				1		X								☐
	Outfall 003			G	SW				1			X							☐
	Outfall 003			G	SW		1			Bm 8/10			X						☐
	Outfall 003			G	SW	3								X	X				☐
	Outfall 003			G	SW		1									X			☐
	Outfall 003			G	SW				1								X		☐
	Outfall 003			G	SW	2												X	☐
																			☐
																			☐
																			☐

List Preservative Code below: 3 | 11 | 3 | 2 | 2 | 11 | 11 | 10

QA/QC Reporting Notes:
* additional charges may appply

MA DEP MCP CAM Report? ☐ Yes ☐ No
CT DPH RCP Report? ☐ Yes ☐ No
- ☑ Standard ☐ No QC ☐ DQA*
- ☐ ASP A* ☐ ASP B*
- ☐ NJ Reduced* ☐ NJ Full*
- ☐ Tier II* ☐ Tier IV*
- ☐ Other: _____ State-specific reporting standards.

- * Report phenol down to MDL
- Required Minimum Levels:
- BTEX - 2 µg/L; TBA - 10 µg/L;
- naphthalene and vinyl chl - 5 µg/L
- ethanol - 400 µg/L
- Group 1 PAHs - 0.1 µg/L
- Group 2 PAHs - 5 µg/L
- Cell - date and Time added per client request.

Relinquished by:	Received by:	Date:	Time:
0940		8-9-17	0940
		8-9-17	1207
	Jm	8/9/17	1605

Temp °C: Observed 3.6 | Correction Factor 0 | Corrected 3.6 | IR ID # a

☐ EDD format: _____ Bm 8/9
☑ E-mail to: aadams@gulfoil.com, cgill@gulfoil.com

Condition upon receipt: Custody Seals: ☐ Present ☐ Intact ☐ Broken
☐ Ambient ☐ Iced ☒ Refrigerated ☐ DI VOA Frozen ☐ Soil Jar Frozen

Batch Summary

'[none]'

Subconracted analyses

SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)
SC37957-01 (Outfall 003)

1713756

Total Metals by EPA 200/6000 Series Methods

SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

1713764

General Chemistry Parameters

1713764-DUP1
1713764-SRM1
1713764-SRM2
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

1713787

Volatile Organic Compounds

1713787-BLK1
1713787-BS1
1713787-BSD1
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

1713788

General Chemistry Parameters

1713788-BLK1
1713788-BS1
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

1713791

General Chemistry Parameters

1713791-BLK1
1713791-BS1
1713791-DUP1
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

1713829

Semivolatile Organic Compounds by GCMS

1713829-BLK1
1713829-BLK2
1713829-BS1
1713829-BS2
1713829-BSD1
1713829-BSD2
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

1714097

General Chemistry Parameters

1714097-DUP1
1714097-SRM1
1714097-SRM2
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

1714115

General Chemistry Parameters

1714115-BLK1
1714115-BS1
1714115-SRM1
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

1714286

General Chemistry Parameters

1714286-BLK1
1714286-BS1
1714286-SRM1
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

1714306

Extractable Petroleum Hydrocarbons

1714306-BLK1
1714306-BS1
SC37957-01 (Outfall 003)

397383A

Subcontracted Analyses

BY81991-BLK
BY81991-DUP
BY81991-LCS
BY81991-MS
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

B184151

Subcontracted Analyses

B184151-BLK1
B184151-BS1
B184151-BSD1
B184151-DUP1
B184151-MS1
SC37956-01 (Chelsea Creek)
SC37957-01 (Outfall 003)

S706141

Volatile Organic Compounds

S706141-CAL1
S706141-CAL2
S706141-CAL3
S706141-CAL4
S706141-CAL5
S706141-CAL6
S706141-CAL7
S706141-CAL8
S706141-CAL9
S706141-CALA
S706141-CALB
S706141-ICV1
S706141-LCV1
S706141-LCV2
S706141-TUN1

S706393

Semivolatile Organic Compounds by GCMS

S706393-CAL1
S706393-CAL2
S706393-CAL3
S706393-CAL4
S706393-CAL5
S706393-CAL6
S706393-CAL7
S706393-CAL8
S706393-CAL9
S706393-CALA
S706393-ICV1
S706393-LCV1
S706393-LCV2
S706393-TUN1

S706943

Semivolatile Organic Compounds by GCMS

S706943-CAL1
S706943-CAL2
S706943-CAL3
S706943-CAL4
S706943-CAL5
S706943-CAL6
S706943-CAL7
S706943-CAL8
S706943-CAL9
S706943-ICV1
S706943-LCV1
S706943-LCV2
S706943-TUN1

S707149

Volatile Organic Compounds

S707149-CCV1
S707149-TUN1

S707242

Semivolatile Organic Compounds by GCMS

S707242-CCV1
S707242-TUN1

S707455

Semivolatile Organic Compounds by GCMS

S707455-CCV1
S707455-TUN1